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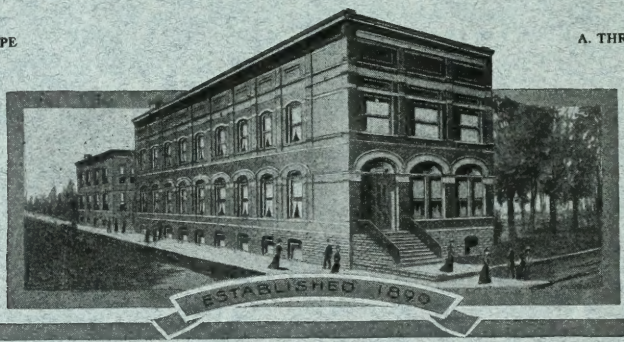

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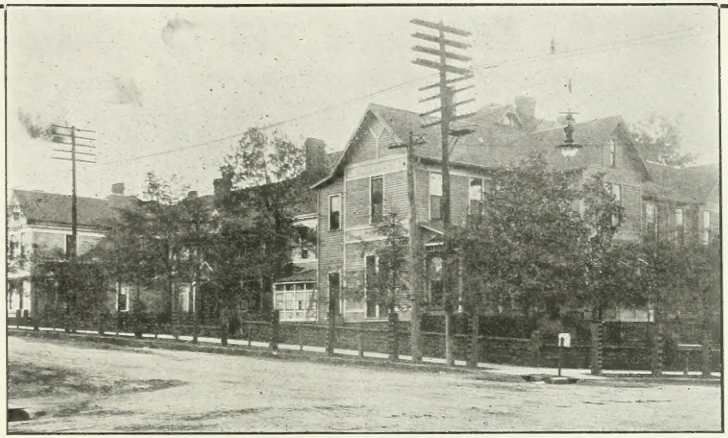

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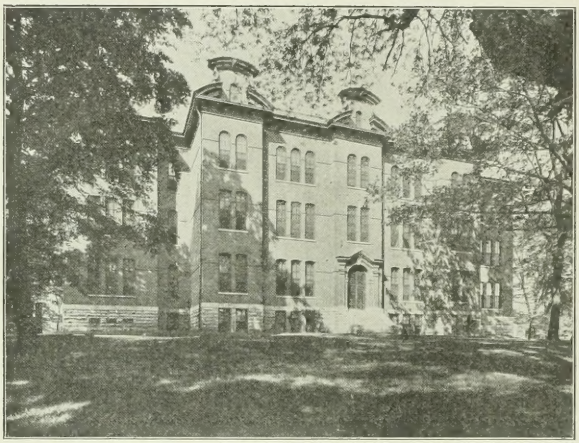

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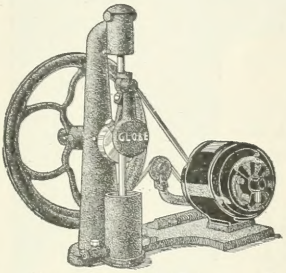

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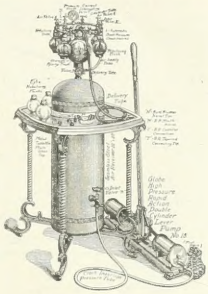

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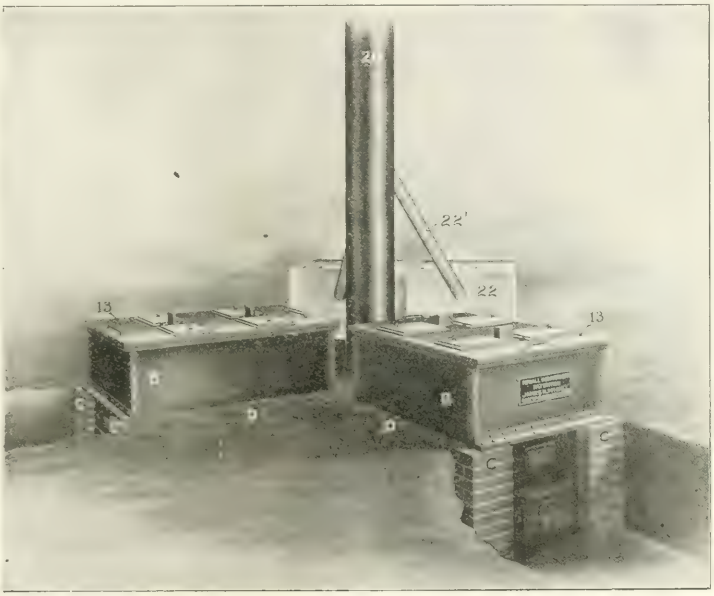

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SOUTHERN MEDICAL JOURNAL

PUBLISHED MONTHLY

Volume III. NASHVILLE, TENN., SEPTEMBER, 1910. Number 9.

ORIGINAL CONTRIBUTIONS

THE DIAGNOSIS OF SURGICAL LESIONS OF THE KIDNEY, WITH ESPECIAL REFERENCE TO THE X-RAY AND THE CYSTOSCOPE*

By LOUIS FRANK, M. D.
Louisville, Ky.

Although the diagnosis of the character of new growths in the kidney may be impossible before operation, the recognition of a surgical lesion and of the surgical indication are not as a rule attended with great difficulty provided a thorough, painstaking and complete examination of the individual is made. The delay in offering aid to such patients as have come under my own observation has led me to believe that surgical conditions present in the kidney are frequently overlooked for a long time. In the presence of such unmistaking symptoms as renal colic I have known this repeatedly to have been the case. The physician in charge, as a rule, has contented himself with giving relief by morphine, and, satisfied with the subsidence of the colic, has neither urged the patient nor exercised himself further to ascertain the cause, nor to discover whether the conditions bringing about the colic had been removed or the colic likely to return.

We believe that this indifference has grown up on account of the seeming difficulties in making a thorough investigation as to the cause of those symptoms which present themselves in connection with the internal urinary organs. It is also due to the fact that physical signs as they are ordinarily ascertained do not enable us to differentiate between the various lesions of the kidney that give rise to similar manifestations.

Early diagnosis is probably more important in connection with pathological processes in the kidney than in almost any other organ and in those diseases which I shall discuss, viz.: pyelonephritis, calculus, tuberculosis and new growths, it is imperative that an early diagnosis be made.

Though frequently giving ample warning to the observant, not only of their existence but also of their progress, these diseases in the kidney are very insidious in their development. The result is that the damage takes place so gradually that many of these patients are in an inoperable condition from the standpoint of cure. They must be subjected to the loss of an organ whose fellow is crippled to such an extent that it is unable to carry out the work of two, thus causing a primary operative mortality. This is strikingly true of new growths and of tuberculous disease. I need but call the attention of my surgical confreres to the clinical history and picture of the renal tuberculous who may come for operation. My observations have been that most of these patients have had a very prolonged period of treatment for cystitis or some other bladder disease and that in the majority of them an extensive tuberculosis of the bladder has been established. As a matter of fact, relief has been sought for the vesical symptoms without there having been a suspicion even of renal involvement. With our present means of examination of the bladder by direct visual inspection

*Read at the Mississippi Valley Medical Society, at Detroit, Mich., September 12-15, 1910

and with such other accurate aid for making diagnosis there is little excuse to-day for such error.

There is much truth in the vagueness of the complaint of those suffering from certain forms of renal lesions, and there is no history, no matter how accurate, which will always cause this to vanish. It must be recognized that even with instruments of precision our diagnosis may at times be exceedingly difficult or so obscure as to render accuracy impossible, but then this is true of other intra-abdominal diseases, and we believe that it may be truly said of surgical kidney diseases as it has been said of gall stones—that they are not found because they are not searched for. It is also recognized that grave disease may exist and be absolutely quiescent so far as any sign is concerned which may even lead to a suspicion of its presence or demand an examination of any kind.

Many of the quiescent conditions, however, would be recognized were a fixed rule made of extending the examination with equal care to both kidneys in the presence of symptoms referable to one only. Bilateral disease is so frequent that this should never be neglected, particularly in the presence of calculus. On account of failure to do this I have upon one occasion done a nephrotomy upon the presumption of stone which did not, however, materialize at operation, but was found a few weeks later by the radiograph in the unsuspected kidney from which I recovered it by operation. In this case the clinical signs all pointed to the calculus free organ. Catheter examination of the ureters showed two apparently normally functionating kidneys, but the clinical signs pointed so clearly to the first kidney operated upon that the operation was done without X-ray confirmation.

Notwithstanding the inability possibly to diagnose from the clinical history alone, the radiograph and the other means and methods of accuracy must always be considered with the history and every effort should be made to bring out this history by careful questioning, and much care must also be exercised by the interpretation that is placed upon it. The age of the patient; the manner of onset of the complaint; its duration or recurrence; the character, location and duration of pain; its manner of subsidence; the presence, or formatemperature until the kidney has evacuated itself, and a further history of an intermittent tumor.

Physical Examination—Some authorities claim that one is able in a very thin subject to palpate a large sized calculus. Although we have removed some good sized calculi we have never been able to palpate a stone in the kidney. On the contrary we have found this a difficult procedure at times when the kidney was delivered out of the body though the nephrotomy revealed stones which had been positively shown previously by the X-ray.

A tumor may be present either in intermittent obstruction or in an obstruction which has been intermittent and has become permanent. An obstruction which is complete from the beginning will show no tumor. This is due to the fact that the blood pressure is soon overcome and atrophy of the kidney takes place. For tumor formation an obstruction must have been a gradual one so as to permit gradual dilation of the pelvis of the kidney without completely overcoming the circulation to the organ, or it must result from a coincident pyelo-nephritis.

We have, however, at hand means for physical examination which even in the presence of even very obscure symptoms will render the diagnosis in most all cases practically certain. There are the cystoscope and the radiograph.

The cystoscopic examination frequently shows a swollen ureteral orifice. The passage of the ureteral catheter will at once reveal from which kidney the blood or pus in the urine is coming. The passage of a wax-tipped catheter will in most cases reveal by the scratches on it whether or not a stone is present. The cystoscope, however, is not nearly so avluable an aid as the Roentgen ray. It

does reveal whether or not one kidney alone is involved, or whether or not a kidney has ceased to functionate. Though secondary in value in the diagnosis of renal calculus to the X-ray and to the clinical history, the cystoscope should always be employed previously to operation as an aid in ascertaining which is the diseased kidney and the condition of the other kidney in regard to the character and condition of its excretions.

Roentgen Rays—As a confirmatory diagnostic means the greatest value of the radiograph is in connection with renal calculi. If we except those stones of pure uric acid composition which may cast no shadow, or a very slight one, we may say that practically all cases of renal or ureteral calculi are susceptible of diagnosis by its aid. The positive results in the hands of good radiographers are to-day so uniform that any operation done upon the kidney for a surgical lesion which has presented any of the symptoms either singly or combined which we have mentioned above must be considered purely exploratory in its character if the X-ray has not been used. It has simplified to a very marked degree the diagnosis of renal calculi and has enabled us to express a positive opinion which heretofore must have been in many instances tentative. Firstly, because as indicated, many renal and ureteral affections simulate stone in their symptomatology, and secondly for the reasons which have already been stated—stones may be for a long time masked and either give rise to no symptoms whatever or cause symptoms referred to other organs. Until the X-ray was instituted as an aid to diagnosis stones were not infrequently overlooked in operations even since Morris so earnestly and persistently advocated nephrotomy as a substitute for needling the kidney under suspicion. It is not my intent nor my purpose to discuss the technique of radiography, but I cannot pass the subject over without calling attention to a few very essential details. No diagnostic radiogram can be of greatest value unless it shows both kidneys, including both ureters and the bladder.

The patient must be properly prepared by thorough purgation and a 24-hour liquid diet preceding the exposure.

A compression tube should always be used.

Every positive radiograph should be checked by a picture taken 24 hours after first exposure.

The plates should be devoid of imperfections.

If there is the least doubt as to the location of the shadow other than in the body or pelvis of the kidney, the ureters should be injected with a 10 per cent collargal solution or a solution of collodial silver oxide, or a lead stylet should be introduced into the ureters through the catheter before the check picture is taken. Not infrequently suspected ureteral calculi may prove to lie outside the ureters. It should be remembered in this connection that phleboliths, fecal concretions, and enteroliths in the vermiform appendix are very frequently sources of error. Calcified lymph glands may also be a cause for mistake. Failure to carry out this check method has in one instance led me to operate for a ureteral calculus which proved to be a phlebolith in the illiac vein.

Lastly, the plate should always be studied in a "diagnostic box." Prints from the plates are not nearly so valuable, nor their interpretation nearly so reliable as the negative.

Renal Tuberculosis—As stated earlier in my paper, most cases of renal tuberculosis come under observation with a ready-made diagnosis of inflammation of the bladder. In other words, the symptoms are those of vesical irritation and of a vesical lesion. These patients are not infrequently passing urine in large quantities with blood and pus, and have for a long time been upon urinary sedatives. Their bladders have been irrigated and various other means have been employed to relieve tion, or disappearance of a mass with the rapidity of its growth; the physical charac-

teristics of the urine before, during or after the attacks or the complaint are the principal data to be considered. Deaver says that "it is not amiss therefore to call attention to the fact that all data can only be applied in the individual case and interpreted in their true relation by one versed in the phenomena of disease in both its usual and unusual form." We must, however, insist that "instruments of precision and mechanical aids" are the only means enabling us to make a positive diagnosis in kidney affections in the vast majority of cases before operation. The lack of pathognomonic signs, the misleading symptoms as to which organ is affected, the similarity of complaint with most dissimilar pathology, and the absolute necessity in contemplated nephrectomy for positive demonstration of one functionating organ, the possibility also of a single kidney, all of these render some precise means of examination imperative. Information of this character cannot be obtained by any clinical history or physical examination be it ever so thorough, be it ever so careful, unless use be made of the aforesaid methods. Thus we therefore find that renal surgery has received new impetus, its scope has been much widened through the introduction and intelligent use of the Roentgen rays and cystoscopy with ureteral catherization.

The predominate signs of most renal affections of a surgical character are: pain, hemorrhage, urinary disturbance and tumor. One or more may be absent, or they may all be present in any given case. Any one of them is sufficient to center the attention upon the urinary tract and to bear in mind the possibility of its origin being of renal character.

In renal calculus pain is in all probability the first symptom which the patient remarks, and to him it is always the predominating symptom. It should, however, be remembered that a small stone may form and pass through the ureter into the kidney, or even through the urethra without causing any disturbance. Again, the calculus may remain quiescent in the kidney for years without producing any symptoms which the patient will notice, or without causing him to complain in any way. Further it should be borne in mind that these unsuspected calculi may cause marked symptoms transferred to other organs, as the bladder, ovary, testicle, appendix, or, as in my own case, to the other kidney. In those calculi which do cause trouble the pain known as renal colic is probably the most familiar and the most marked of all symptoms. I have, however, known such colic to be mistaken for an appendicial colic, and conversely appendicial pain may at times be mistaken for renal colic, a further indication for the necessity of X-ray examination in every case of suspected renal calculus no matter how strongly suspected and in every case where calculus might be considered as a disease to be differentiated.

In addition to colic, renal pain which may be referred to the loin, over the front of the abdomen, or down into the groin is one of the commonest symptoms. The severity of this pain differs greatly in different individuals. It is increased upon active movement, by running or walking, though it may be of such agonizing severity as to arouse a patient from sleep without any known cause for its exacerbation. Reno-vesical, reno-ovarian and reno-uterine, and even reno-renal reflex pain have been described. Gastro-intestinal pains are not uncommon, and it has not been infrequent that we have met with patients with predominating gastro-intestinal symptoms relieved by operation upon the kidney. While this has been most often true in the movable kidney, such observations have also been made in the presence of renal calculi.

Hematuria—The amount of bleeding is variable. The quantity and frequency does not depend on the number of stones, their size or their shape. I have seen very large branched calculi without practically any blood discernible to the naked eye. I have seen medium sized stones without any hemorrhage,

whereas, on the other hand, in our last calculus case profuse hemorrhage of six months' duration was the only symptom of which the patient ever complained. It is needless to say that in this case a positive diagnosis was made only by means of the radiograph. The clinical symptoms and such other evidence as we were able to ascertain before taking the picture all pointed to a probable renal growth. Blood in microscopic quantities occurring either intermittently or more or less continuously is a fairly constant sign of calculus. The sign becomes much more valuable if the microscope shows in addition to blood the presence of pus cells.

Pyuria—Pus is present in very many cases of renal calculus, and while at times it may be evident microscopically, it is very often in microscopic quantities. In other words, pyelitis, on account of the irritation produced by the stone, is a more or less constant sign in these cases. Occasionally it is the earliest symptom.

The microscope will also show various crystalline elements which are analogous in character to the chemical constituents of the offending stone.

The urine, notwithstanding the presence of pus, is, unless there is obstruction and decomposition in the pelvis of the kidney, acid in character. Should there have been obstruction the urine may contain pus in large quantities intermittently and may be neutral or alkaline in reaction. In these latter instances there is frequently a history of a chill with the bladder condition. It is a well-known fact that in the early stages of renal tuberculosis the trouble is manifested mainly or entirely through the bladder symptoms; hence this frequent mistake. These symptoms are not necessarily due to any specific lesion in the bladder itself. Careful inquiry into the history will bring out the fact that these patients have suffered more or less at times from pain referrable to the kidney. Occasionally palpation will show rigidity of the muscles, tenderness and some enlargement in the renal region. These, however, are not sufficient grounds upon which to base a diagnosis, which can only be positively made by a cystoscopic examination. Hence we will consider only cystoscopic findings.

It was formerly believed that the kidney was involved secondarily in the tuberculous process. This has been shown not to be true. It has been demonstrated that the kidney is always the primary focus of infection, as shown by Fardol, in 1886, and Coyla, in 1887, and the infection of the kidney is practically always haematogenous. It is true that genital tuberculosis may co-exist, in which the bacteria have been transmitted to the associated infected organs through the blood or the excretory channels. Primary tuberculosis of the bladder is an extremely rare disease. In Kelly's cases there was only one instance of tuberculosis of the bladder unassociated with tuberculosis of other organs, and Walker cites, as the only exception to secondary tuberculosis of the bladder, a case reported by Sextorpa, who found only a single instance in 10,016 general autopsies in which the lesions existed primarily in the bladder. He says, "while primary tuberculosis of the bladder is a possibility, for practical surgical considerations its existence may be disregarded." Walker found that the kidney seemed to be first implicated in 184 cases out of 279, thus showing the great relative frequency of the disease originating primarily in the kidney as compared with other genito-urinary organs.

In these protracted cases then of supposed cystitis, renal tuberculosis should always be suspected. Herein lies the value of the cystoscopic examination and in the appearance of the bladder under such examination it is comparatively an easy matter to ascertain which kidney contains the primary focus of infection. It is not necessary in all cases to subject the patient to ureteral catherization, though to this there can be no real objection. All observers are agreed that the supposed danger of carrying infection into the ureter or into the kidney by such an examination is

more fanciful than real. Sherrill says that, "while the question of advisability of catheterizing the ureter in these cases is one worthy of consideration * * * * * experiments seem to show that disease of the ureter only follows infection where an obstruction exists below; that when the bladder is not extensively diseased, catheterization of the ureter is justifiable and a means of diagnosis without an equal. Moreover, by its use the activity and usefulness of the other kidney can be determined more satisfactorily than by any other means, and that when the diagnosis of tuberculosis is made, the condition of the other kidney must be determined, both as to disease and as to officiency. The most satisfactory method offered is by ureteral catheterization."

Walker further says, in his article on tuberculosis of the bladder, in the Annals of Surgery, as indicating the importance of cystoscopic examination, that "there is no sign or symptom, nor is there a definite symptom complex which indubitably proves the presence of tuberculosis of the bladder; direct inspection can only justify an absolute diagnosis. The same frequent and painful micturition, and the general bladder distress which accompanies tuberculosis of that organ are also produced, to nearly the same degree of intensity, by tuberculosis of the kidney, and almost the same symptomatic picture is presented by certain cases of tuberculosis of the prostate." There is absolutely no symptoms, nor class of symptoms, nor is there any means of fixing the tuberculous kidney upon one side or the other, nor of fixing the lesion in the kidney except by means of a direct examination through the cystoscope. As a matter of fact, the kidney enlargement and pain may be wholly upon the normal side.

Barringer, in his summary of the value of the cystoscope in tuberculosis of the kidney, says that we can always tell which kidney is infected, that we can determine the extent of the lesion, and that, in some cases, the diagnosis may be made by the cystoscope alone. This latter point is of very great value when we bear in mind the difficulty, and, in fact, the inability at times to demonstrate, either by microscopical examination or by bacteriologic tests the presence of tubercle bacilli in the urine. In using the cystoscope, however, one should bear in mind the clinical history, which is one of polyuria, dysuria and haematuria, in addition to those symptoms above named as present upon physical examination. Polyuria alone, occurring in the young, should arouse suspicion and in the absence of some definite cause which can be readily and early made out would be a justification for cystoscopy.

In connection with cystoscopy I wish to say a few words as to its technique and as to the instruments to be used. My own practice in the past ten or twelve years has been to use in both male and female the straight tube. We have developed the straight female cystoscope and the technique of Kelly in its application to the male cystoscope, so that at present, and, in fact, for some time past, we have been using in the male what may be termed an elongated Kelly cystoscope, to which we have adapted a light carrier. The patient may be cystoscoped in either the knee-chest position, or, what we much prefer, with the body in the exaggerated lithotomy position and in the Trendelenberg posture. We have made use entirely of air distention, and have found that it is not only harmless but that in cases where there is hemorrhage into the bladder, or where there is a very large amount of pus discharged from the ureters, either of which (blood or pus) would render a distending fluid such as water too turbid for examination, there is absolutely no interference with the vision of the bladder or of the ureters. When it is intended to use ureteral catheters this is readily accomplished through such a straight tube, and there has never been the least difficulty in carrying out this operation. There is no collar or other window in this instrument to serve the purpose of retaining air in the bladder, as this is done through the posture and atmospheric pressure. The in-

strument, we may say in passing, is readily used as an operating cystoscope for the removal of foreign bodies or small calculi, or for direct contact upon small growths within the bladder, or for operations upon the lower ends of the ureters, such as the division of strictures at the orifice, or for the removal of calculi lying very low down.

The discomfort from the use of this instrument is not greater than for the ordinary cystoscope with which we are all familiar, and to me its simplicity and the great ease with which it may be used have been a very great comfort.

I might also add that the price of this instrument is such that one may have a number of different sizes without going to any great expense, and that cystoscopy of the male with this straight tube is as simple and easy as is cystoscopy of the female with the Kelly instrument.

New Growths—Kelynack says, "Early diagnosis is essential for successful operative interference, and yet diagnosis is often exceedingly difficult; renal tumors are among the most difficult of abdominal enlargements to diagnose correctly. They certainly are the cause of many errors." The presence of tumor is very significant as indicating that the growth has existed for such a time as to render it either irremovable in toto or as to have permitted such metastases that early recurrence will be the rule. Our endeavor should be to make a diagnosis before tumor formation, but here again we are confronted with the absence of symptoms in occasional instances until the mass has attained such size or the disease existed so long as to be inoperable.

The predominate sign here, as in other surgical lesions of the kidney, are haematuria, pain and urinary disturbances.

Haematuria—Appears only in about 50 per cent of the cases, some series showing a larger percentage than this and others showing a decidedly smaller. It is a rule, however, that haematuria is present some time during the history of the growth, but it is seldom present before tumor is detected.

Pain—This is usually a symptom that is of little value, except that it may be the first indication to the patient that something is wrong and bring him to examination.

In children in whom renal growths occur in relatively great frequency pain is often absent.

The pain is usually not severe at first, and unless there has been hemorrhage with formation of a clot in the pelvis of the kidney or ureter it is never colicky in character. Unlike pain due to calculi, it remains located in the lumbar region, or when radiating does not pass down into the groin and testicle as is so common with stone, but radiates upward in the abdomen and into the inter-costal region. Movement and exercise seem to have little effect upon it, though as a result of these, if haematuria is present, it may be greatly increased.

Urinary Disturbances—Early in the history of renal growths there is usually a history of polyuria. Occasionally the quantity of urine will be diminished, and we have known of a case of extensive carcinoma of the kidney secondary to carcinoma of the lung in which the secretion of urine had entirely ceased. Microscopic examination may show the presence of blood, or very rarely a small portion of tissue may be detected by the microscope in the urine. If such a portion of tissue finds its way into or through the ureteral catheter, diagnosis at once becomes positive. This would indicate the great value occasionally of ureteral catherization in suspected cases of renal growth and the necessity for it in all such instances.

Recently Braasch has shown that by injection of colloidal silver oxide into the pelvis of the kidney it is possible by alteration in the shape of the kidney pelvis to make a diagnosis of renal growth, and he has been able to do this in several reported cases.

As a matter of fact there are no positive signs which are present early in these cases.

The urinary changes as ascertained through the ureteral catheter would be positive were they always present. In addition to this, varicocele is said to be an early sign, but unfortunately it is rarely present.

Many patients with renal growths have been suddenly stricken with localized pain, increase in the size of tumor, haematuria, fever and chills, followed by death without the slightest premonitory sign of the presence of malignant disease of the kidney.

Occasionally a good skiagraph will show a very much enlarged kidney, which, with haematuria, will enable us to make the diagnosis, even though no tumor is palpable upon physical examination.

Renal growths must always early in their history remain among the obscure intra-abdominal diseases. We would repeat, however, that at the first indication of urinary disturbance, or of pain located in the lumbar region more or less constant in character we should be awake to this possibility and subject the patient, in addition to the usual physical examination, to a searching examination by our mechanical and precise aids in diagnosis.

400 The Atherton.

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POST-RECTAL DERMOIDS. Case Report.

By T. L. DRISCOLL, Ph.G., M.D.,

Cartersville, Ga.

Aware that post-rectal dermoids constitute an unusual class of cases, I take the privilege of bringing before the reader a case in nowise different from the ordinary, yet interesting insofar as demonstrating the surprises met with in these peculiar cases.

Case presented himself for examination complaining of a discharge that kept his trousers wet. Upon examination there was what I believed to be an uncomplicated case of fistula in ano, open external with a very profuse discharge of pus. Introduction of probe deferred until operation, because of the pain resulting from manipulation. However, when patient was anesthetised grooved director was introduced and carried opposite fourth sacral vertebra in median line, through a fistulous tract.

Knife was introduced on director and after cutting for about an inch all resistance was lost and then our condition was found in the form of a dermoid which contained quite a handful of hair.

Cyst and fistulous opening was curetted and sutured with results in two weeks. Our deductions will be drawn thus: We were dealing with a tumor of the post anal gut which had become inflamed and the fistulous opening represented the line through which the suppurating cyst discharged the pus.

ACUTE ANTERIOR POLIOMYELITIS

By A. W. HARRIS, M.D.,
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Our attention has recently been so forcibly attracted to acute anterior poliomyelitis that a review of the subject seems not inappropriate.

This disease has been known as a clinical entity since 1840, when Heine so well described his cases; and Erb states that even as far back as 1784 cases were described by Underwood, which could have been nothing else. The epidemic nature of it was first shown by Colmer, who recorded a small epidemic in a Louisiana parish in 1841 (reported in 1843). Since then we have records of more than forty epidemics in this country and abroad, and a striking fact is they seem to grow more numerous and more severe. It is claimed by some that this is due to our more careful clinical observation and increased knowledge.

Other reasons for calling your attention to this disease, if others are necessary, are that more than half the reported cases have come from this country, and the first recorded epidemic was in our own section.

Much new knowledge has been added to the etiology, and the etiological factors which earlier writers laid stress on have been discarded in the main, and while some of them are still admitted to have a bearing on the development of the disease, none of them are indispensable. A few of these might be mentioned—exposure to cold, teething, prolonged bathing, gastro-intestinal irritation, injuries or trauma, over-exertion and age. The last three are still claimed to be factors: in the report of the Nebraska epidemic of 1909, Shidler (A. M. A., January 22, 1910) says that over-exertion seemed to be a predisposing cause in the young adult threshermen. Some recent writers state that trauma is too firmly established, apparently in some cases too directly connected with the development of the disease to be discarded. Lovett and Lucas, writing November 14, 1908 (A. M. A.), and reporting out of his collection (635) 31 cases with a clearly described accident or fall immediately precedinf the paralysis, or an interval of only a few days intervening, says: "We do not consider that our cases, suggestive as they are, establish a traumatic origin of poliomyelitis, but that so large a number give a clear history of trauma preceding the paralysis we consider it worthy of serious consideration in formulating the etiology."

Acute anterior poliomyelitis was once thought to affect only very young children, hence the term infantile paralysis, and while it is true that the vast majority of cases do occur in individuals under five years, it does affect, especially in its epidemic type, young adults and even middle-aged people. The youngest authentic case was reported by Collins of an infant four days old, but some (Morton) used to explain congenital clubfoot on this basis. In reference to age and trauma, Starr says in his text-book that the frequency of its occurrence at about the age of learning to walk, and the most frequent location of the paralysis being in the legs, has led to the supposition that there could be a functional hyperemia of the lumbalr cord which might be an etiological factor.

The condition of the hygienic surroundings seems to have no influence on its development nor does a previous bad state of health favor it in the epidemic cases, but sporadic cases have developed at the termination of many of the acute diseases, but the usual history is that the child was perfectly well before being affected.

Another etiological factor, universally admittted, is the season. It most frequently occurs in the warm months, especially August

and September, all epidemics either beginning or reaching their maximum intensity at this time.

Climate seems to exert little influence on its development, since epidemics have been reported from both the North and the South.

The infectious nature of this disease has long been suspected and almost proven; the age incidence, the seasonal exacerbation, the immunity from second attacks, the occurrence of epidemic and sporadic cases, the occurrence of more than one case in certain families, the occurrence of scattering cases immediately preceding and following an epidenic, and the clinical picture the disease presented were almost enough evidence to prove it, and recently the experimental work on monkeys carried on by Flexner and Lewis at the Rockefeller Institute for Medical Research, has left little room for doubt.

They began their work along this line in 1907, but used the *spinal fluid* obtained from cases which were not fatal, and therefore got no results. In May, 1909, Landsteimer and Popper succeeded by peritoneal injection in infecting two monkeys with the emulcified cord from two fatal cases. In September of the same year Flexner and Lewis obtained the cords from two fatal cases and began a series of experiments on monkeys with startlingly successful results. They have been unable to demonstrate a micro-organism, but have discovered a living so-called filterable virus which they have successfully carried through twenty-five generations in the monkey and state that it has now attained such virulence that even minimal quantities injected subdurally in monkeys will produce in from six to eight days almost invariably a paralysis the clinical picture of which is indistinguishable from the human.

By various tests, desiccation, filtration, glycerinization and freezing, it has proven a hemarkably resistant virus; they have not been able to cultivate it outside of living tissues They have shown that at least one channel of its elimination (and also probably its entrance) is through the nasopharynx. They were led to this conclusion by the inflammation seen there in their infected cases, and have produced paralysis with virus obtained from this macerated mucous membrane of a monkey dying on the fourth day of the disease.

In this connection it might be of interest to mention a case seen in 1908, final age 2½ years, gastro-intestinal irritation for two or three days with temperature followed by acute inflammation of the nasopharynx and tonsils, which on microscopic examination was declared streptococcic. About forty-eight hours after the discovery of the tonsilar infection paralysis was noticed, which was limited to the right lower extremity.

They have found no evidence of the virus either in the urine or feces in monkeys with undoubted cases. They tried other channels of inoculation besides the cranium and have been successful in some instances in producing the paralysis by inoculation in peritoneum, subarachnoid space, subcutis, in the sciatic nerve, and on the abraded mucous membrane of the nasopharynx. From last, however, is somewhat open to objection, since it has been claimed that it is almost equivalent to a subcutaneous inoculation. Leiner and Wiesner, of Vienna, have been successful in producing the disease by stomach inoculations and by the inhalation of an emulsion of the virus, thus showing that it may gain an entrance, both by the alimentary and respiratory tracts, at least in experimental cases.

It has long been observed that children rarely if ever were attacked a second time. A few cases are on record, but they are exceptions.

Flexner proved that there was in his monkey expehiments a passive immunity, and in some cases produced an active immunity with the serum from some recovered cases which met all the requirements for such. It must be remembered that all these experiments have been made on monkeys, and Flexner emphasizes this point that experimental poliomye-

litis in monkeys is a far more severe and fatal disease than epidemic poliomyelitis in human beings.

Assuming that this virus is alive, and there is little doubt that it is, he (Flexner) calls attention to its minute size, being much more easily filterable than that of yellow fever, dengue or rabies; he also mentions its similarity to that of rabies in its incubative period, some cases going as long as thirty days after inoculation.

It is interesting to trace the history of our knowledge of the pathology. For many years it was thought that the only parts affected were the anterior horn cells of the cord. The first positive post-mortem findings were reported by Cornil in 1863. These were not cases which died from poliomyelitis, but old cured cases dying from other conditions, therefore only the permanent results were left for the pathological picture, and he concluded that it was a primary cell degeneration, and was supported in this by Charcot and others. In 1870 Roger and Damaschino, examining some fatal cases, added the further knowledge that it was in all probability inflammatory in origin. During all this time and until recently, however, it was thought to have a selective action for the cells in the anterior horns. From that time to the present many reports have been made, and with our improved methods and opportunities the areas involved have been found to be much greater than this. The report of Horbitz and Sivel of Norway (A. M. A., October 26 1907) has been selected as a reference as to our present knowledge of the pathology. Their report is based on seventeen autopsies of acute cases in the Norway epidemic of that year. All of their findings in these were essentially uniform, and they conclude that "in fatal cases of acute anterior poliomyelitis there is a diffuse acute inflammation of the entire cord with its pia-mater, the medulla pons, basal ganglia and often also the cortex to a greater or less extent always in connection with a similar inflammation of the pia-mater." In cases not fatal to polio but succumbing to some complication during the attack, of which they had four, the pathological evidence, while not so great in extent, was much greater than has been supposed. Besides the marked degeneration in the anterior horn cells, there was some evidence of inflammation in the vessel walls in the medulla, occasionally in the basal ganglia and in a few places in the cortex, and they conclude that no sharp line should be drawn between the mild and severe cases. It can readily be seen from the above that a disease with such widespread pathology will give rise to many different symptoms and may show a varying clinical picture, and explains why some cases die from bulbar paralysis and why, early in the attack, some are so easily confounded with cerebro-spinal meningitis.

As a natural consequence, after the inflammation has subsided, and the cells have degenerated, the muscles supplied by them undergo a rapid atrophic change, the amount depending on the complete or incomplete degeneration and the number of cells destroyed. If the area is large, even the development of the bone may be interfered with.

Most writers agree that the other organs of the body show no constant lesions aside from those incident to temperature and a general infection, and that there is a general infection can scarcely be doubted, since Flexner has shown that in the acute stages the virus is found in the blood, the cerebro-spinal fluid and the mesenteric lymph glands, and Levaditi and Landsteiner have found it in salivary glands.

It has been recently suggested that since our knowledge of the pathology has increased, and we find it so much more extensive than was formerly taught, that the old name should be discarded and a new one chosen, and numerous ones have been suggested; it should be borne in mind, however, that in most cases which recovered the effects left are directly traceable to destruction of the anterior horn cells, and these in all cases are

probably most severely affected. Granting this, we had best let the old name stand.

Little will be said here of the symptomatology. Wickman, of Sweden, has practically rewritten this subject, describing eight types of the disease. Unfortunately, there is no English translation of this work and not much has been added to our literature. Its incubative period in human beings is unknown, being variously stated at from one to fourteen days. Its onset is usually with fever, rarely above 103 degrees F., and within from two to four days paralysis is noticed. In a few cases the onset is more severe and there may be delirium, coma or convulsion, or vomiting and diarrhoea. In many, though, there are practically no initial symptoms, the patient being apparently well on retiring to awake in the morning with more or less paralysis. As a rule there are no sensory symptoms. In some cases, especially in adults, they complain of pains and aching in the back and limbs. That these exist in children also and our attention not called to them is probable. This has been a more prominent feature in the recent epidemics, nearly every case having pain and even tenderness on motion, and on these points, together with the febrile reaction, where no paralysis results, the diagnosis of the abortive cases is made (in epidemics). There is frequently profuse perspiration, and if a blood examination is made, Müller claims a lencopenia will be found.

While the statement is usually made that the sphincters are never involved, in 150 cases most thoroughly investigated by the Massachusetts State Board of Health in 1909, there were thirty-six with some bladder symptoms, from simple frequent micturition to retention and incontinence. The extent of the paralysis varies from practically a general paralysis to that of a single group of muscles or even one muscle, by far the most common location being one lower extremity.

A point worth remembering is that the paralysis first discovered is, in nearly every case, more extensive than what we might call the terminal paralysis. Cases have been reported, however, in which there is a gradually progressing paralysis requiring several days before it reaches its maximum. There is a reasonable belief though that many of these may have been cases of Landry's paralysis, especially the fatal ones. This period of paralysis lasts for from one to four weeks. Then an improvement begins, which continues for about three months, after which time little is to be hoped for, though some improvement does go on probably up to one year.

The paralysis is, of course, of the flaccid type, and atrophy of the muscles begins as early as two weeks after the onset and is strikingly apparent in from six weeks to two months. The extremity is cold and may be blue, but there are never any trophic skin changes.

During the period of paralysis the joints being so relaxed and the muscular balance of the limb destroyed, the development of various deformities is a common occurrence.

In some of the epidemic cases the symptomatology varies widely from the above and the case for several days may be quite confusing, some assuming almost an identical picture of meningitis and some dying from bulbar paralysis.

A most distressing feature of poliomyelitis is our inability to diagnose it before the appearance of the paralysis and even with all the recent valuable additions to our knowledge of its cause and pathology. This problem has not as yet been solved; however, much encouragement is offered us. Flexner has observed that in monkeys affected with the disease, before the paralysis has developed, the spinal fluid shows characteristic change, and should this hold true in our clinical work it would be of great value to us in epidemics when we are on the lookout for new cases. All attempts at diagnosis from serum reactions so far have failed.

After the paralysis has developed it is quite

easy; almost the only diseases ever causing much confusion being multiple neuritis and a few pseudo-paralyses, as that of rickets and disease of the hip, and possibly a form of chorea.

It was once taught that it was rarely if ever fatal, and this is more or less true of the sporadic cases today, only an occasional case dying, but in its epidemic form we have an entirely different story, the mortality varying from 6 to 10 per cent (Starr), and in some epidemics as high as 30 per cent. In this type, however, it is an interesting fact that in nearly one-fourth of the cases there is complete recovery, while in the sporadic type there is some defect left behind in nearly every case.

We will have to admit that our treatment of the early stages of polio is a failure. We can simply put our patient to bed, purge and diet them and trust to nature to do the best she can. The custom of administering ergot and belladonna has its theory and its advocate behind it, but in actual experience is of no value. In the later stages much can be done to ameliorate the condition and prevent deformities by the use, at the proper time, of electricity, massage and orthopedic appliances and operations. Concerning these deformities, Lovett and Lucas make the broad statement that they are largely, if not wholly, unnecessary. They can be anticipated and the proper appliance adjusted to prevent them.

It remains to be seen now with all our recently acquired knowledge how much of it will be applicable to our treatment. In the meantime, prophylaxis is the tack we must pursue—quarantine and isolation should be enforced, and the nasopharynx of persons exposed should be disinfected with hydrogen peroxide, since Flexner has shown that a mild solution is destructive to the virus. He has been able also to produce an immunity, in some instances, by the injection of serum from recovered cases. Just how long this immunity will last, or whether it is also applicable to human beings, are questions which time should answer. These scientists are still working on polio, and in the near future more new knowledge and many valuable therapeutic aids are to be hoped for. In the meantime we will have to content ourselves with our newly learned prophylaxis and the old methods of treatment.

This subject is receiving marked attention by many of the Northern and Eastern States, and one (Massachusetts) has already placed it among its reportable diseases. Several others are on the verge of the same step. There are no reports from this section, and it is not due to the fact that we do not have it here, for, even with my limited experience, I saw in 1908, in addition to the one above referred to, two other cases within two months time and heard of several others in this city (Nashville). It behooves us, therefore, to look into this condition more carefully and follow the lead of our Northern neighbors.

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The Worthington.

A PENETRATING WOUND OF THE RIGHT VENTRICLE, WITH SOME REMARKS UPON THE TREATMENT.

By W. M. McCABE, M.D.,
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The patient, a negress, 18 years of age, while in a difficulty with another negress, received a knife wound which entered one inch to the left of the sternal margin, and traveling beneath the skin, partly severed the costal cartilages of the fourth and fifth ribs, about half an inch to the left of the sternal edge. Entering the pericardial sac between the fourth and fifth costal cartilages, it penetrated the right ventricle near its center. The wound in the pericardium was just large enough to permit the tip of the index finger to enter, but did not allow it to penetrate into the pericardial sac.

She entered the hospital fifteen minutes after the injury, profoundly shocked, pulseless, and with a temperature of 97 degrees F. The external wound was dry, and no perceptible hemorrhage was present. Percussion was performed with difficulty because of the pain and restlessness of the patient, but it was thought that pericardial dullness was increased. The heart sounds could not be heard nor could the apex beat be seen.

OPERATION.

Patient entered the hospital at 6:30 p. m., fifteen minutes after the injury, but her condition was so grave and the shock so complete that to operate at this time was thought to be not only unsurgical but fatal. She was placed in bed, surrounded with hot water bags, and given morphia. Soon a faint pulse could be detected, and at 7:30 p. m., with a pulse of 160, and of fair volume, operation was advised and accepted.

At 8 p. m., nearly two hours after the injuryl, the skin was quickly shaved, painted with iodine and the patient etherized by Dr. John Hudson. The original wound was enlarged and the fourth cartilage completely severed in the original knife wound and fractured distally. Blood was now spurting from the pericardial opening at each systole. This opening was quickly enlarged and the index finger of the left hand thrust into the opening in the right ventricle. A catgut suture was placed at the side of the finger and traction upon this controlled the hemorrhage to some extent. My finger was relieved by that of Dr. Richard Keys, and in this manner the triangular stab in the ventricle was closed. Clots were removed from the pericardial sac by sponging and with the hand. A tube was placed in the pericardial sac and the opening sutured with a continuous catgut suture.

It will be noticed that the patient reacted sufficiently in a little less than two hours to justify operation. The clot in the pericardial sac controlling the hemorrhage.

The left lung margin was exposed and remained passive until a stab was made in the base of the pericardium for drainage. The pleura was probably injured here, and the lung bulged through the original wound with each inspiration. The heart beats did not seem to be disturbed by handling or sponging the heart. If the blood spurted from the ventricle the radial pulse would disappear.

On the day following the operation a pneumothorax was detected and aspirated. The lung descended, but contained moist rales. On the fourth day the opposite lung became involved and moist rales appeared. The patient continued in this condition with pulse ranging from 100 to 120 per minute and temperature registering from 99 to 101 degrees F., until the night of July 21, seven days after the operation, when she died.

The autopsy, performed by Dr. John Witherspoon, was incomplete because of parental objections. The external wound had healed except where the tube emerged, some pus was found around the tube and on the pericardium.

The pericardium was healed except where the tube entered. The pericardial sac was clean and dry. A few adhesions were present behind the heart. The wound in the heart, as the photograph shows, had healed.

Is it better to operate immediately in a stab wound of the heart with the patient in profound shock, or is it better to wait for reaction is impossible without operation, it is doubly so with the added shock of a surgical procedure. It is estimated that less than 18 per cent of penetrating wounds of the heart die immediately, and that from 7 to 10 per cent of them recover without surgical interference. Of the 154 cases of cardiarrhapy collected up to June, 1910 (Bryant and Buck Surgery),

The end of the pin points to the wound. In the white space the end of a Suture can be seen.

tion would be easy, or if we were sure that an operation would not be fatal, the question would be equally easy. I never like to operate upon a pulseless patient, and believe if reaction? If we were sure of reaction the question the surprisingly high recovery rate of 46 per cent is reported.

The question of drainage is perplexing. If a tube is inserted, adhesions are almost sure to occur, and if the pericardium is sutured

without drainage, a purulent pericarditis may ensue. I believe if another case should present itself I would suture without draining the pericardial sac, and aspirate if a purulent pericarditis developed. A small drain might be of value in the external wound down to the pericardium. It is recommended by some of the experimenters upon canine hearts to tie the sutures during diostole, because of the danget of them pulling out if tied during systole, but I think this is more a theory than a practice. To regulate the time of tieing sutures in a heart beating at 160 or more per minute, is somewhat beyond the scope of human accomplishment.

It is also stated by authorities that superficial sutures hold better than deep ones, and that interrupted sutures produce smaller scars than continuous ones, and that the cavity of the heart should not be penetrated. All this sounds good, but the thinness of the auricles and right ventricle may make it almost imperative to penetrate the cavity before the sutures will hold.

Catgut will hold all right, but I believe silk or linen is better, because it becomes encysted, and if the cavity should be penetrated there is not the danger of a particle becoming detached and producing an embolus.

Nashville, Tenn., Sept. 16, 1910.

NOTES ON HAY FEVER.

By VAULX GIBBS, M.D.,
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Hay fever or hay asthma is a neurosis due to irritation somewhere in the air passages. Cases have been cured by treating the nose, i. e., by removal of tearbinates when hypertrophied. I wish to announce that I have cured a few cases by treating the throat for chronic pharyngitis. The disease, in a large number of cases, is due, I think, to the nerve endings being constantly irritated by the presence of chronic pharyngitis with enlarged follicles scattered over the whole pharynx. The treatment consists in the application of nitrate of silver 30 per cent to 50 per cent solution to the chronically inflamed pharynx.

I have encountered some cases where there were atrophied tonsils that did not respond to this treatment. I believe the removal of the atrophied tonsils, together with nitrate of silver solution, would relieve these cases, but have not succeeded in getting any patient to allow me to remove the tonsils for this condition.

Atrophied tonsils or enlarged diseased tonsils will cause the pharyngitis by acting as a foreign body and the irritation therefrom produces the pharyngitis.

An attack of grippe may set up your chronic pharyngitis again, and the asthma will reappear.

I have two cases treated five years since that have never had any return of the hay fever.

RECENT CONSIDERATION OF THE DUODENAL ULCER.

By A. W. CALLOWAY, M.D.,
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The recognition of duodenal ulcer may be looked upon as a product of modern abdominal surgery. Since 1900 it has occupied a foremost place in medical literature. The principal work has been done by Moynihan of England and the Mayo Brothers of our own country. Its development up to that time was accidental rather than the result of any well defined effort to discover its etiology, constancy, or diagnosis.

From 1817 until 1865 a few cases of perforation were reported. At that time Kraus reported the record of eighty cases which really gave duodenal ulcer the place it occupied in text books until 1895. Since that time there have been essays with reports of numerous cases from Germany, France, England and our own country.

The early operations as before stated, were all for cases of perforation. Finally Moynihan by a careful record established what might be called a symptom-complex by which he could recognize the duodenal ulcer before it had perforated. A similar course has been pursued by the Mayos. It is safe to say, that quite a large number of internalists are recognizing the presence of a duodenal ulcer with a precision which has at least equaled that of any abdominal lesion.

The writer fully recognizes the danger of any enthusiasm upon a discovery reported by pioneer statistics, and while he may be enthused himself, in feeling that one more lesion can be added to the list of causes for dyspepsia which means the relegation of quite a large number of so-called cases of neurosis to the past, he realizes that the subject will need critical surveillance.

Nothing is more unsatisfactory to an internalist, who must continue treatment for an indefinite length of time in order to secure results, than a hazy conception of the disease which confronts him. For one, I become enthusiastic over the promise of a well defined cause for a certain class of cases which are to come under our care.

The presence of symptoms of indigestion with pain in the neighborhood of the right half of the epigastric region, leads at once to the possibility of a duodenal ulcer. In quite a number of cases of obscure diagnosis as well as those in the ordinary run of the so-called stomach cases these symptoms are presented. The gall bladder, pancreas, liver, kidney, pyloric end of the stomach and duodenum all come in for consideration. Medical literature up until the last few years has not given special attention to the differentiation between the gastric and duodenal ulcer and probably many of the cases of duodenal ulcer have been diagnosed as gastric. In a recent article written on the subject by Codman in the Boston Medical and Surgical Journal, November 25, 1909, some interesting points were mentioned, to wit: that in the development of mammals the large intestine swung across the small, causing in some instances pressure on the transverse portion of the duodenum by the root of the mesentery and superior mesenteric artery. In a horizontal position quadrupeds would have no obstruction, whereas in the vertical position of man this takes place. Riegel concurs in this opinion, stating as follows: Compression of the duodenum by the mesentery may be the beginning of a disastrous chain of symptoms. It is supposed that this obstruction dams back the secretions of the pancreas and the liver in the first part of the duodenum. The caustic secretions, which normally pass through the pylorus, as the result of this impaired condition cause in time erosion and even deep ulceration. We have in the past been told that the most frequent cause of ulceration is the local interference with the circulation in or about the liver. The necrosis following is inflamed by an ex-

cessive acid and changes in the blood such as anemia or chlorosis.

It has been suggested that a condition similar to herpes may be the prime factor; hence a neurotic temperament may predispose. Such ulceration or inflammation in the region of the pyloric sphincter may be compared with similar conditions with which we are so familiar about the anus. What we are objectively familiar with there could easily be presumed in the duodenal region of the pylorus.

Codman further states that the duodenal ulcer is nearly as common as acute appendicitis, supporting his statement by the evidence of Dr. Wright's autopsy record at the Massachusetts General Hospital. The results are as follows:

(a) Duodenal ulcers occur invariably so close to the pylorus that they must lie in the folds of the mucous membrane when the sphincter is contracted.

(c) In nearly three thousand autopsies an open duodenal ulcer was present, whatever the cause, in one hundred cases.

(d) The duodenal ulcer occurs twice as frequently as the true gastric ulcer.

(e) Cases characterized by hemorrhages show a large artery in the base.

(g) Scars left by round ulcers of the duodenum are not noticeable because the mucous membrane is replaced over them, glands and all. Microscopically, they are recognized by a cicatricial gap in the muscle layers. Codman further deduces from clinical records:

(a) Duodenal perforation is from one-twentieth to one-fortieth as common as in acute appendicitis.

(b) Two out of every three cases diagnosed as gastric ulcer are really duodenal.

(c) Most all cases of pyloric obstruction are duodenal ulcer.

(d) Chronic cases complaining of hunger pains subject to recurring attacks of temporary interference with the pylorus should be considered cases of duodenal ulcer.

Kemp says, "Undoubtedly many cases have been diagnosed as gastric ulcer when it was duodenal ulcer." Mayo Brothers put the ratio of duodenal to gastric two to five, Murphy from one to three, Trier one to nine, Adrol one to forty.

One would be at a loss to account for the great disparity in opinions as to the frequency of duodenal ulcer. The German statistics show it comparatively rare, while those in England and America demonstrate that it occurs more frequently. This can be accounted for by the fact that the German surgeons perform the operation only for accidents or complications of the ulcer rather than the ulcer itself, while in both England and America the operation for excision and gastro-enterostomy in stenotic cases is quite frequently performed. The late German statistics show, however, a great number of cases. So many cases can only be diagnosed post-operative, that until the exploratory operation is more frequently performed we will probably not know just how often the duodenal ulcer occurs.

Collins, in 1894, reported 279 cases, of which forty-two were children under ten years of age. Of these forty-two, seventeen occurred the first year of life. Personally I have not diagnosed duodenal ulceration in infants, but it may be well to consider such a condition possible in some of the cases of disturbed digestion which offer a puzzling diagnosis. Nephritis is claimed by some authors to be a cause of duodenal ulcer. The irritative factor being ammonium carbonate. Referring again to duodenal ulcer in childhood, Helmholz reports sixteen cases of infantile atrophy, eight of which post-mortem showed duodenal ulceration. It seems to me, in making a diagnosis, that we must depend upon the late symptoms, such as stenosis, with its evil effects and hemorrhages. Helmholz says that a striking factor is the rapid loss of weight.

Moynihan states that in nineteen out of fifty-one cases of perforating duodenal ulcer

the appendix was cut down upon as a diagnosis of acute appendicitis. This being due to the fact that the fluid passes through the ileo-fossa.

The object of this paper is not to give a cut and dried account of duodenal ulcer; such can be obtained better than the writer could give, in any one of a number of text-books. It is essentially one of random notes on the recent available information of the subject, which seems to support a view which I have held for some time in regard to most all cases of chronic stomach trouble, viz.: that although a large percentage of such cases present symptoms of nervous dyspepsia, as a matter of fact there are but a very few cases of neurotic origin pure and simple, without an organic basis for many of the symptoms.

When we recount the cases of gastric and duodenal ulcers, atonyies, ectasies and stenoses, it is no wonder that many of these cases have been included under the head of nervous dyspepsia. It is true that many cases of an organic base will yield to hygienic treatment and therefore since they do, it is no argument, per se, that they are strictly a neurosis.

Diet and rest are the important factors in the treatment of all stomach conditions. Medicine thus far has played a very little part in the modern treatment of chronic digestive disorders. There have been heaped upon us great numbers of digestants, antacids, anti-fermentatives, tonics, etc., all of which probably have some slight use and should be employed in the proper place, but unless the diet is scientifically as well as practically applied, their usefulness is curtailed.

The statistics cited above, perhaps overrate the proportional frequency of the duodenal and gastric ulcer. As other reliable observers state, the gastric occurs much more frequently than the duodenal ulcer. One observed considers that the peptic ulcer, either gastric or duodenal, occurs almost as often as appendicitis.

The appendix is recognized as a useless organ and because of its anatomical position is frequently diseased. Is it possible that, as stated in the first part of this paper, the obstruction offered by the dependence of the large intestine upon the third part of the duodenum does not account to some extent for the frequency of ulcer? Again, the sphincter and valves of our anatomy are always weak points, from the very fact that they stand out as the sentinels, protecting against both physiological and pathological infringement. Citing the anal sphincter as an objective instance, it would be easy to conceive of various grades of inflammation of the pylorus from an engorgement, excoriation, punctate ulcer to a fissure or chronic ulcer. With variable lesions we should look for various grades of exhibitory symptoms.

The internalist frequently meets a case of chronic dyspepsia with periodical attacks of pain in the right upper quadrant. Heretofore, upon first evidence one would consider cholelithiasis. As our knowledge increases upon the duodenal ulcer it seems to me that pain in this region under the above circumstances will more likely indicate an acute recurrent or chronic duodenal ulcer. We now know that many of the long-standing cases of "stomach trouble" are referable to the liver or gall-bladder primarily; the immediate or chronic effects of duodenal ulceration secondarily, and perhaps the complication of the three as a result.

It is well to acquaint ourselves before making a diagnosis with the history, as chronic duodenal ulcer develops with a precision which cannot be easily misunderstood. In fact, ulceration may commence very early in life, followed by a quiescent period of variable length up to even forty years, when well defined symptoms of the effect of chronic duodenal ulcer may appear. It is very important that the time of symptoms following the ingestion of food should be noted. The pain is felt anywhere from two to six hours after eating. When occurring at the latter

period one must assume that the ulcer is probably in the second part of the duodenum. When at an earlier period than two hours there is either an active ulcer with recent adhesion to the abdominal wall or liver, or stenosis is beginning to develop. The pain must not be mistaken; it is one of gradual development with a feeling of distention. There is relief afforded by the eructation of bitter fluid or gas. The interval is strongly diagnostic providing the same kind of food is taken. The variety of pain as well as the time of development. A heavy meal may invite pain, whereas a light one would cause no discomfort whatever. This explains why one may say that there seems to be no uniformity either in pain or the amount of pain in regard to the various kinds of meals.

Patients often say that it matters not what or when they eat as to whether the pain develops. Neither does it matter whether they eat anything at all or not. This is a statement which is never acceptable to me. Invariably upon further analysis I can determine a uniformity in the character and development of pain in direct relationship with the amount and kind of food eaten.

One characteristic of the pain is that it often wakes the patient at two o'clock in the morning. This may sometimes be relieved by bland food or by the vomiting of irritating hyper-acid stomach contents. Moynihan states that a sensation of weight or fullness accompanied by distention is often described as boring, gnawing or burning. This is often relieved by belching of gas or regurgitation of food which is very acid or bitter.

With the onset of an exacerbation of a chronic duodenal ulcer there may be a constant flow of saliva. This is often a valuable premonitory sign in diagnosis. This description of pain is very interesting. It may be cramplike, which is undoubtedly due to the spasm of the pyloric sphincter to protect itself from the irritating contents. In stomach cases we often hear a patient say that his attacks of pain always follow a period of good appetite and feeling. Patients will say that liquid foods cause the pain to come earlier and last longer than those of more difficult digestion. However, the persistency in this liquid diet will often cure when no other means is available. Permanent stenosis appears when the ulcers are healed. It is true that there may be a severe pyloric cramp with temporary stenosis in acute ulceration. Vomiting is not a reliable symptom and is more a part of gastric than duodenal ulcer. When stenosis, however, is permanent, vomiting becomes one of the cardinal symptoms.

The diagnosis clinically rests on the periodicity of the forenamed symptoms. Many patients complain that the attacks arise without an apparent cause. If the patient be interrogated closely enough this will usually be found to be untrue. Most attacks follow colds and influenzas, others follow overwork, worry, or hasty eating of improper food. Many are ushered in with a chill followed by fever for several days. Between attacks recoveries may be so complete that it seems improbable that the patient should have any organic disease. The attacks have been ascribed to a neurosis, acid dyspepsia, and general indigestion. We all know that the above terms are indefinite and are simply based upon one or two symptoms. The hunger pain is probably due to the acid stomach contents, and therefore is worse at the height of acidity. The presence of food alone does not cause the pain. Physical signs are not necessary in making an accurate diagnosis, whereas, the history and sequence of symptoms is all important. In the majority of cases there may or may not be tenderness in the pyloric region. It usually covers an area of two or three inches and may be exquisitely tender. Rigidity most frequently accompanies tenderness, later on when the stage of stenosis is reached the well-marked symptoms of ectasy.

Moynihan states as follows: "It is therefore chiefly, indeed as a rule, quite exclu-

sively upon the anamnesis that the diagnosis of duodenal ulcer is made."

The duodenal ulcer may in rare instances be associated with jaundice either as a complication of an after result.

First: By the concomitant duodenal catarrh which spreads to the biliary papilla.

Second: As a result of cicatrization which involves the papilla.

If the stomach contains food persistently twelve hours after eating, one may safely presume that there is a narrowing of the pylorus. The gastric stasis resulting invariably causes hypertrophy of the muscular tissue of the stomach owing to its increased activity. It is generally an accepted fact that severe hyperchlohydria occurring periodically can be put down as duodenal ulcer. Therefore many cases called hyper-acidity, acid gastritis, acid dyspepsia with pyrosis, is really the exhibition of a chronic duodenal ulcer.

Hemorrhage bears about the same relationship to an ulcer here as does hemorrhage in pulmonary tuberculosis. There are all grades from occult to fatal. The severity depending entirely upon the proximity to an involvement of blood-vessels, and furthermore upon the size of these vessels. Therefore, the absence of hemorrhage is not much evidence against the presence of an ulcer. Of course if a hemorrhage does occur and is found, it assists in clearing up the diagnosis.

Undoubtedly, we have been waiting for the symptoms of stenosis in duodenal ulcer before making our diagnosis, and this reminds me very much of former days when pulmonary tuberculosis was not diagnosed as such until the patient became a consumptive. Hemorrhage is now regarded as a late complication rather than an early symptom. The hemorrhage from a duodenal ulcer is much more serious than that of the gastric, owing to its proximity to larger blood-vessels.

One reason why cases of chronic duodenal ulcer have been called acid dyspepsia and hyperacidity, etc., is that the regurgitation of the contents of the stomach are, as we know, acid, but testing out these cases we find many that are not hyperacid; in fact it is the rule to find them about normal and the regurgitation due to the stenosis. One must also distinguish between hyperacidity with and without stenosis.

To the surgeon belongs the credit of the modern knowledge of the chronic duodenal ulcer. His operations both for diagnostic and pathologic purposes have given us the fact that there is an organic base for a large majority of so-called stomach cases. Knowledge acquired in this way where the ulcer, cicatrix, the resulting stenosis, and gastric ectasy can be actually seen by the naked eye, has convinced us beyond doubt of organic disease in this neighborhood which heretofore were held to be the imagination of the ambitious stomach specialist.

The following deductions are especially presented.

First: That duodenal ulceration occurs much more frequently than generally supposed.

Second: That many cases are not diagnosed unless there is a hemorrhage or stenosis.

Third: That where there seems to be no classical or clinical distinction between the presence of gall stones or duodenal ulcer; that as a matter of fact most of these are the latter.

Fourth: That the duodenal ulcer is the most important lesion concerning the internalist occurring in the epigastrium.

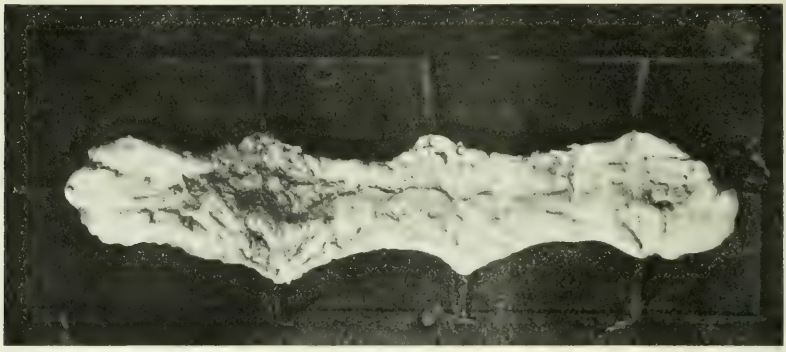
Fifth: That we must recognize the duodenum especially in the neighborhood of the pylorus as one of the weak spots from an anatomical standpoint, and classify it, therefore, with the appendix and hemorrhoidal inch.

Sixth: Since it is so amenable to proper treatment its early diagnosis is of great importance not to the surgeon, but to the medical man, owing to its successful treatment by medical means.

A HEMORRHAGIC FORM OF APPENDICITIS.

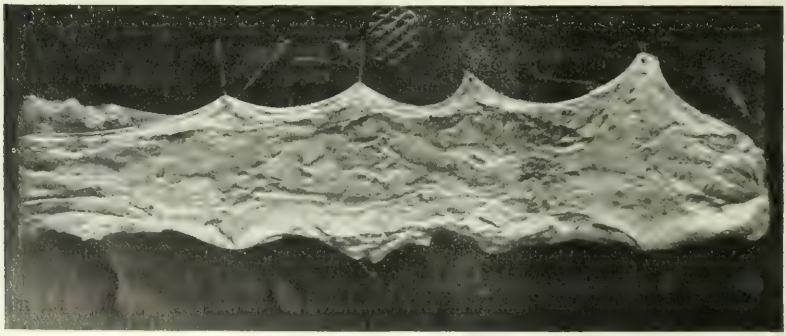
By GASTON TORRANCE, M.D.,
Birmingham, Ala.

In the following cases the only abnormal condition found in the apendix was blood with organized clots, some of which were attached to the macerated points shown in the photographs of the mucous membrane of the proximal end of the appendix.



CASE I.

Case 1.—A young lady, sixteen years of ago, was referred to me by Dr. Messenger, of Kimberly, Ala., February 4, 1910. Se had had some digestive trouble for about a year, spitting up of food, sour stomach and gas. About two months ago she became very hysterical and was brought to the city for treatment. She has had some pain in the right side of the lower abdomen since this time, and has been very constipated. For the past week she had grain of morphia was given during the afternon. On admission to the hospital the pupils were contracted and she was well under the influence of the morphia. Temp. 99,



CASE II.

has had some slight pain in the region of the appendix constantly. Has had to be catheterized for the past three or four days. Her bowels have not moved for three days. She was taken with a sudden sharp pain in the region of the appendix about 11 a. m., and was brought to the hospital on a train at 7 p. m. There was marked tenderness and rigidity over the right rectus with some abdominal distenpulse 110, W. B. C. 16.700; rigidity and tenderness less marked. Operation, under ether, right rectus incision; the appendix showed some acute inflammation and distention. When opened it was found to be filled with dark, fluid blood, with some organized clots adherent to the mucous membrane which showed an area which was dark and had a macerated appearance. The specimen was stretched on a glass slide, placed in formalin and photographed the following morning.

Case 2.—A young married woman 19 years of age was referred to me by Dr. M. E. Morland, of North Birmingham, March 25, 1910, with the following history: She has had attacks of pain in the right side at intervals of a few weeks for three years; has had indigestion, sour stomach with gas. While down town the previous day shopping she had a severe attack of pain in the right side and suffered all night and the following morning, and had to be given morphia for its relief. There was some tenderness and rigidity over the right rectus; temperature and pulse normal, W. B. C. 16.000. The appendix was removed and when opened practically the same conditions were found that obtained in the previous case; dark fluid blood with numerous small areas where the mucous membrane appeared macerated and dark with adherent, organized blood clot.

THE PHYSICAL SIGNS IN INCIPIENT PULMONARY TUBERCULOSIS.

By W. A. OUGHTERSON, M.D.,
Professor Medical Department of the University of Nashville and Tennessee.

The object of this article is not to offer anything new but to familiarize ourselves with the auscultatory phenomena and differences in corresponding portions of the two sides of the normal chest and make better use of the methods we are all familiar with.

I believe the most important phase, in connection with this much discussed subject, is the earliest possible diagnosis; this, I believe, offers more in a general way than anything the medical profession can do as the disease must first be recognized before other measures can be carried out. Past experience has demonstrated that the earlier a case is recognized the greater the chance for recovery, as well as removing a possible source of danger to others.

We very often hear and read of the following statements: The physician who fails to recognize incipient tuberculosis should go back to the farm and chop wood; get into the jungle, have his license revoked, or other radical changes made for the man with such defects in his diagnostic ability. Personally my little experience has made me more charitable. When a physician reaches that stage of refined ability in his diagnostic methods, or as some people put it ego, whichever term you choose to use, that he never overlooks a case of even incipient tuberculosis, I believe it would be doing a favor to his community to superannuate such a man with a life-time pension. I believe everyone of us overlook early and sometimes well advanced cases, some, of course, more than others. We are frequently found congratulating ourselves on making a diagnosis that our neighbor has just overlooked and pronounced the lungs sound. If we would be a little charitable and go into the merits of the case we would find a reason for the failure. the pains to examine the patient carefully, which is not the lack of ability on the part of

I believe one of the causes is we do not take the examiner, as is often thought to be the case. Second, we do not attempt to elicit half the information that might be obtained in taking a history.

For example—when a young woman comes in complaining of some pelvic trouble, especially when time is limited, our whole attention is directed to the pelvic organs, so much so that one might well wonder if a woman ever suffered from any other than pelvic disease. In the same class of cases we often fail to expose the chest properly, making a few strokes over the clothing and pass to something else. This is a great injustice to patient and physician alike, as I know of no condition in which we need the co-operation of the patient more to arrive at a definite conclusion than that of pulmonary tuberculosis.

One condition, I believe, is often too much disregarded and that is that of a young person, and *especially one under weight*, complaining of some digestive disturbance of a persistent nature. I do not mean to convey the idea that every such case is tuberculosis, but I do believe that many cases of tuberculosis complain of digestive disturbance for a considerable period of time before there is anything to make them think of the trouble in the lungs.

Another condition is bladder symptoms in the absence of any venereal disease. You have all seen cases, some of which have complained bitterly of frequent urination, with burning, and voiding of large quantities of pale urine of low specific gravity; some observers attach a great deal of significance to this condition. I can recall several cases presenting the above symptoms that developed physical signs of tuberculosis, which made the diagnosis beyond all doubt. Three I know of who died of tuberculosis. Any anemia without a well recognized cause should direct us to a careful examination of the lungs.

There is no doubt that many cases seem to have a rapid pulse for a considerable period of time before any other definite sympotms develop. One observer makes the claim that in many cases there is a change in the frequency of the pulse as long as two years before other physical signs are elicited. Personally, I am unable to confirm this statement from my own observations. I have seen some few cases in which the pulse remained persistently over one hundred for several months before I could find other definite signs.

The evening elevation of temperature has been too well known as a symptom of early tuberculosis to call for mention. Many authorities regard the subnormal morning temperature with a normal evening temperature equally as important as the evening elevation, with normal morning temperature.

I believe every case of rectal fistula should demand an examination of the lungs, as well as the rectum. Right here I would like to take this opportunity to report the case of a young man, who was operated on for rectal fistulae in November, 1909, with complete recovery and total absence of all symptoms referable to the rectum. An examination of the lungs was made at the time of operation and no physical signs found. He left the hospital in a few days apparently in good health. In December of the same year he returned to the hospital with a temperature of 104, pulse 120, respiration 24 and stated he had on that same day a slight hemorrhage. I made a careful examination three days in succession and the only signs elicited was a short clicking rale over one apex. I asked three other men to examine him, men in whom I have confidence, and they failed to find other evidence of the disease. At the expiration of a week the temperature had returned to normal and the appetite good. After a few doses of iodide of potassium, some sputum was obtained and tubercle bacilli was found. As his family lived in Asheville, N. C., he was advised to go there with a view to regain his health. A few days later we received a note from a friend saying he had another hemorrhage, while on the train, and died immediately. He left the hospital with a normal pulse and temperature. His weight was up to normal and no signs of anemia,

stating he felt quite well and thought he could return to work.

I desire to say a few words about examination. The well known methods of inspiration, palpation and percussion are of great value in the examination of the chest, but if we wait for physical signs to develop sufficiently so that they may be recognized by any one of the above mentioned methods, the case has in the great majority of instances progressed beyond the incipient stage. You have all seen many cases of widespread fibroid phthisis in which the percussion note was more resonant than normal. Insetad of giving a dull note that we all look for on percussion, local prominences and depressions are by no means incompatible with sound lungs and only demand an investigation as to their cause. I believe auscultation offers by far the most in the recognition of early physical signs.

From those who are concerned to make the earliest possible diagnosis of pulmonary tuberculosis, we hear more and more loudly each year the command to study with all possible care and attentiveness the auscultatory differences between corresponding portions of the same lung. The slightest variation of pitch and quality, intensity or duration of either inspiration or expiration at any pont, as compared with conditions in the corresponding portion of the other lung is, we are told, a sign to be noted since it may be one of the factors in a decision affecting the patient's whole future. If this be true, it behooves us to know as much as we can about any differences existing between the auscultatory phenomena in the right lung and those in the left in the healthy chest.

It has been clearly recognized for a long time by all who have given any attention to physical signs in the chest that the apices of the two lungs differ in nearly all healthy persons. The breath sounds over the right apex being louder, deviate more from the normal respiratory murmur than those heard over the left apex. Some explain the difference as being more harsh over the right than the left apex. In summing up this difference it sometimes becomes very difficult to say whether it is pathological or normal. Cabot has pointed out a difference between the base of the right and left lung posteriorly. The breathing is louder and harsher at the left base than the right. The Germans refer to this difference as rough breathing. It is claimed that this difference is not so marked in persons under twenty years of age. No explanation has been ocered as a cause for this difference, so we are obliged to make our deductions here as in the case of the apices.

Another normal difference exists with the patient in the lateral position. When the patient is lying on his side the restriction of motion of this side of the thorax leads to difference in the phenomena obtained on palpation, percussion and auscultation in the lower lung as compared with the upper lung.

As a result of this difference in the two sides we should be guarded about what we hear in a patient's chest when in the lateral recumbent position. For the above reason I believe we would feel safer about our findings with the patient on his face or in the sitting posture.

There are other normal differences to be considered in an examination that are so common to all that I do not think need to be mentioned. If we are to depend upon the auscultatory phenomena for the recognition of early physical signs—then what are they? Every man in diagnostic work has some sign that he regards more valuable than another. In the absence of an emphysemous chest I look upon the slightest rale, or friction rub heard over one apex and especially when heard at no other point in the lungs, as a very important physical sign, tubular breathing, especially over the left apex remembering that the breath sounds are louder over the right. Of course, rales are not to be disregarded anywhere in the chest. A prolonged expiratory murmur heard over a limited area, jerky or cog-wheel breathing (which is often due to nervousness) must not be disregarded.

We should not content ourselves by asking the patient to breathe deeply; he should be re-

quested to cough and follow with a deep inspiration and carefully note both the inspiratory and expiratory sound, and even a single dry click should receive serious consideraiton. When our physical examination has been completed the man who can sum up the whole picture and make proper deductions is the man who will recognize early tuberculosis.

I will not discuss the subject of tuberculin further than to say that no questionable case should pass through our hands without having received the benefit of the tuberculin test.

The aid to be obtained by the use of the X-ray I believe, warrants our consideration when made by a competent man.

135 *8th Ave., North.*

SYPHILITIC GUMMA OF THE BLADDER. Case Report.

By WALTER LENEHAN, M.D.,
Nashville, Tenn.

Mr. E., age 39 years, married, has been a "gay Lothario." On Sept. 3 he contracted gonorrhea which ran the ordinary course. He treated himself with remedies and injections unknown to me. His gonorrhea became chronic and being unable to check it, he consulted Dr. Champion of Atlanta, Ga., on Nov. 20. At that time his only symptom was the morning drop, and as I understand, some threads in the second portion of urine tested by the two glass test of Sir Henry Thompson. He received a treatment by Dr. Champion at that visit.

The next morning he arose with a very full bladder, and when he voided his urine, he noticed that it was blood red. This condition constantly persisted until he consulted me on January 1, with but one intermission of a week, during which time he remained in bed. There was from the first a severe ardor urinae and he was forced to hurry to the urinal every 15 or 20 minutes during the day, and had to rise from his slumbers some 15 or 20 times a night. He had lost 25 pounds in weight. This is the incomplete and fragmentary history as I received it, and I shall now describe the patient's condition as it was presented to me:

He was somewhat emaciated; was very nervous and melancholic. His appetite was poor. He was anaemic (Hb. 60 percent 3,800,000 red and 9500 white corpuscles), and presented a typical cacectic condition. On examination of the urinary tract, I could find no evidence of discharge from the urethra. The prostate and vesicles were normal per rectum. Nothing was to be learned by palpation in the region of the kidneys. There was an extreme hypersensitive condition of the bladder and urethra that precluded all instrumental exploration except under anesthesia, which the patient refused. About an ounce of urine would be passed at each act. It was of a dark red color, alkaline in reaction, S. G. 1038, and contained albumen in small amounts. Microscopically, there was no pus, but leucocytes of the eosinophite variety largely predominating, existed in about the same proportion as in the blood count. There were a few bladder epithelial cells and a very high percentage of triple phosphate and oxalate of lime crystals. There were no gonococci. The most striking feature was the large number of red blood corpuscles, which counted with a haemocytometer revealed 25,000 corpuscles per cu. mm of urine.

I was at a considerable loss for a diagnosis, but papilloma of the bladder was my first thought. However, in the absence of a cystoscopic examination to confirm my suspicion, I decided to treat the patient empirically for a few days and watch results, and perhaps, allay the hypersensitiveness sufficiently to enable me to make a more thorough examination. This I began by using irrigations of boric acid and the instillation of weak solutions of Silver

Nitrate in the bladder daily, and also the internal administration of urinary sedatives. Under this treatment, the patient improved considerably. He could now pass through the night comfortably and could hold his urine with more ease during the day. He improved to a degree that the blood would disappear from the urine during the night and the first urine voided in the morning on rising would be clear, but the blood would reappear after he had been down to his business for an hour or so.

At this stage a symptom developed that subsequently led to the diagnosis and the results of treatment have fully borne it out. On Dec. 29 the patient, while in the office for his daily treatment, casually remarked that his throat was sore and asked me to look at it. When I did so, I have never been met by a more typical picture. There was a large gray ulcer about the size of a 25 cent piece on the left cheek, extending down into the sulcus between the cheek and gums. Another similar ulcer covered the left peritonsillar region, extending across the soft palate and down the uvula. The cervical, submaxillary, and epitioclea glands were enlarged. I immediately asked the patient when he contracted syphilis, to which he readily replied, "Six years ago, Doctor. I would have told you of it but I did not think it could have any connection with my present trouble."

I learned that his treatment had been very incomplete and that he had used, freely, of alcohol during the four years following his chancre. He also told me that he had a large gumma of the frontal bone during his fourth year of syphilis. Having this history as a guide, I naturally began to try to associate the two conditions, and after explaining the importance of a cystoscopic examination to my patient, he readilly consented and determined to "Fortify his nerves," (as he styled it himself).

I cocanized the deep urethra and passed the crystoscope with ease. The mucosa of the entire bladder was mildly inflamed, and a nodular mass, from the ulcered surface of which blood was oozing, was observed. This tumor was situated at the base of the bladder just anterior to the trigone, and was possibly about the size of a chestnut. It contained some necrotic tissue around the edges of a rather deep, clean erosion, *but no evidences of pus.* A diagnosis of syphilitic gumma was made.

I at once administered an injection of gray oil 0.10 gm (equivalent to 1 SS grs. of metallic mercury), and to my great surprise, the blood began to disappear gradually from the urine from the third day after the injection. On the seventh day I repeated the injection, and two days later, all traces of blood disappeared. I gave two more injections at intervals of 7 days, and then changed my medicine to the protiodide pill, and potassium iodide.

Cystoscopic examination four weeks after the first injection of mercury, revealed a normal bladder, with no sign of tumor. At the time of this writing, the patient has gained 20 pounds in weight, and says he never felt better in his life.

This case has been very interesting to me and I have detailed it with some care, as it is, as far as I am aware, the first of its kind reported. I find one mention of syphilis of the bladder in the literature which I have examined and that is only generalized. Meyer says that wherever we have a persistent hemorrhage from the urinary tract, to not overlook syphilis, particularly of the kidneyand possibly of the bladder. I have communicated freely with a number of my colleagues, especially genito-urinary surgeons, and they have all told me that my case is unique and the only one on record as far as they knew.

405 *Hitchcock Building.*

BISMUTH POISONING.

By GEORGE B. LAWSON, A.M., M.D.,
Roanoke, Va.

Bismuth Subnitrate, according to some authors, has been in use in internal medicine for several hundred years. According to Rokk it was introduced by Odien and Delaroshen about a century ago. Its value in internal medicine has been atributed to its insolubility, its non-absorption by the tissues, and to its local healing and protective action. It has been and is still a rather general idea that bismuth internally has no toxic action and no bad results except sometimes lumping in intestines. However, occasionally all through the medical literature we find recorded a few cases of poisoning from its use. From the frequent presence of impurities in bismuth, especially arsenic, the toxic symptoms from its use have generally been attributed to the presence of impurities.

For almost a hundred years certain experimenters have shown its harmful properties under certain conditions. Orfila (1) as far back as 1818, experimenting with dogs showed that it had some corrosive action on the stomach, and that when used in large amounts on a wound it caused death 20-40 hours. Later he showed that it was found in liver, stomach wall, spleen and urine after large doses. Still later, other experimenters have even found bismuth in the milk.

Feder-Meyer in 1879 (2) used bismuth ammonium citrate hypodermically in rabbits thus causing tenesmus, diarrhoea, incoordination, slow pulse, slow respiration and death. After the injection of small doses daily, the animal showed emaciation, pus in urine, intense pigmentation and ulcers of the stomach, small, and large intestines with fatty degeneration of uriniferous tubules.

One of the earliest cases of poisoning in man is reported by Kerner. (3) A man of 40 years took together bismuth subnitrate and cream of tartar, with death on the 9th day, with abdominal pain, decreased urine output and with sloughing of the tonsils, uvula base of tongue, with inflammation and maceration of entire intestinal tract. He discussed the conditions in which bismuth subnitrate was soluble and showed that this drug when combined with cream of tartar caused marked toxic symptoms.

Bismuth can hardly be said to have had a place in surgery until 1880, in the days of antisepsis when Kocher (4) trying to get primary healing, used bismuth subnitrate both in the wounds and on the dressings. He used this in a large number of cases, at first with the idea that there was no absorption; but out of this number he reports six cases of poisoning; one of these finally died. From the above study Kocher has brought out the classical symptoms of bismuth poison, gastric pain, diarrhoea, swelling of the gums, tongue and pharynx, loosening of the teeth, then a desquamative nephritis with fine granular casts, and kidney epithelium in the urine, with marked black dyeing of gums, stomach and intestines. The above symptoms were obtained with the use of the drug in wounds, while at the same time there was none used by mouth.

Rokk—1870, (5) studying the action of bismuth subnitrate taken by mouth, found that in a few large doses it caused some inflammation of the stomach while in small doses continued for a long time, as much as three months, it caused emaciation, loss of energy, changes in the alimentary tract, varying from slight hyperaemia to marked ulceration, with frequent casts in the urine, also a blister like rash in some cases.

Probably the most thorough experimental work that has ever been done along this line, was made by Steinfeld and Meyer, (6) who used Bi 203 hypodermically. These authors showed that bismuth if injected in large doses gave muscular incoordination, weakness and death in a short time, while with repeated

small doses the same symptoms were manifested as was brought out by Kocher. Some cases showed bloody diarrhoea and tenesmus.

For the last few years bismuth has been used in surgery to a certain extent as a dressing for burns, and superficial wounds, etc.

In the last few years, Beck (7) using bismuth subnitrate for Tubercular sinuses in X-Ray work found that there was marked healing action from its use, and for this reason began to use it as a paste quite generally for Tb sinuses. Lately this paste has come into quite general use, and most of the reports on it are very favorable.

Somewhat later, Joseph Beck (8) published reports of the use of this paste in nose and throat work and it seemed by these reports, to be almost a panacea for very many nose and throat diseases.

Only few cases of bismuth poisoning have been reported until the bismuth paste commenced to be used, but from the wide use of this paste and from the introduction in some cases of comparatively large amounts of bismuth in almost closed cavities, the cases of poisoning became rather frequent. In such case the bismuth has had to be washed out of the cavities with olive oil. In some cases with toxic symptoms there has been only a small amount of bismuth used. Dorn (9) reports one case of poisoning after the injection of the paste in a knee joint. Kaufmar (10) reports two cases of poisoning with one fatality.

Poisoning from the subnitrate part of the compound seems to have attracted very little atention. Maxson (11) reports two cases in which Squibb's bismuth caused cyanosis and garlicky breath. A few weeks later one of the same cases was put on bismuth again, with the same results as before. He calls to mind the old teaching that bismuth when it passes through the intestines unchanged is toxic, but if the sulphide is formed it is not toxic.

Beck (12) in an admirable article has reviewed bismuth subnitrate poisoning from the bismuth standpoint and from the subnitrate standpoint. He reports several additional cases of his own.

The action of bismuth subnitrate in wounds is not known. From the size of the crystals we know that it cannot be picked up and carried by the circulation to distant parts. Some soluble form of bismuth must be formed by contact with the tissues. One can hardly see how a drug with such large crystals can form very much of a protective coating in the stomach. If bismuth subnitrate is mixed with various percentages of hydrochloric acid, filtered and tested with sulphurated hydrogen, one finds that the bismuth is partly dissolved by a little less than 1 percent of hydrochloric acid, and as the percentage of hydrochloric is increased, the precipitation from the filtrate is markedly increased. It might be that the crystals of bismuth subnitrate have no effect whatever in gastric intestinal cases, but that the good effect is due to the formation of small amounts of soluble bismuth or of finer particles in the form of the sulphide.

Bismuth subnitrate is not generally regarded as an antiseptic. However, Kocher in his attempts to get healing without suppuration and drainage, used bismuth in wounds and as a dressing. Schuler in 1885 (13) showed that when urine, blood and finely divided flesh were each mixed with bismuth subnitrate, putrefaction set in much later than it did in controls without bismuth. In 1896 P. Carles (14) considered bismuth subnitrate a rather strong antiseptic (when not mixed with the carbonate); in contact with water or aqueous secretion breaking up in bismuth oxide and nitric acid. Hydrogen sulphide in small intestines causes evolution of nitrous vapor.

As the value of bismuth paste in sinuses, our own experience has not been sufficiently wide to say definitely, but the majority of users speak very highly of it. Steinman (15) gets no good results from the use of the paste and says that it is dangerous in cases with elevation of temperature and in cases with much secretion.

Our own case of bismuth poison is as follows:

L. V. Male, age 27—Pneumonia on right side April 1904, followed by empyemia which

discharged into one of the bronchi. Patient was not operated on at this time. In May 1909 a swelling commenced about 4th and 5th right intercostal spaces inside of nipple line on right side. This was incised and pus evacuated.

Patient admitted to Jefferson Hospital, Roanoke, Va., Oct. 16, 1909. Still expectorating large quantities of pus. He had dullness at base with several discharging sinuses in front. Reaction of rib was done by Dr. Trout in October, 1909, with evacuation of considerable pus cavity. After this cough and expectoration stopped, also the sinuses in front healed up. Two weeks after operation bismuth injections (Beck's Paste, 33 percent bismuth subnitrate) were begun. Seven injections of one ounce each were used with four days in first interval and ten days between the other injections.

After the 6th injection patient noticed slight pain in abdomen, sore gums and blackness of gums. This lasted according to his account four days.

The next day after the last injection, patient noticed pain in abdomen under left costal margin, head felt full. Patient felt drowsy, had no appetite, felt weak and "no account."

Two days after last injection patient's mouth got very sore, "slobbered" all the time, gums and inside of cheeks got black. Tender on pressure along lower costal margin. This condition lasted about ten days and improved, however, about January, 1910, after two weeks of improvement and without any further injections patient again showed marked symptoms, gums got sore, felt bad with loss of appetite. Pain and tenderness along costal margin, more especially on right side. Urine showed albumen and graoular casts. On Jan. 26th the cavity was washed out thoroughly at different times with olive oil. Patient seen agar March 14-10. During this preceeding time patient had periods of depression and loss of appetite, alternating with periods of well being. Patient thought there was very great increase of wax in ears.

At this time still had marked stomatitis, retraction of the gums with black pigmentation of gums and mucous membrane of mouth.

Urine still showed albumen and casts. Proctoscope showed no pigmentation of rectum.

March 20, 1910, patient had severe attack of pain in sacral region, radiating into lumbar muscles. This lasted about two weeks. Patient was weak, very nervous, appetite poor.

July 9-10. Patient still nervous, appetite good, sinus from operation discharging very little, gums black, and receding from teeth, mucous membrane of cheeks in contact with gums and teeth dyed black. Examination of larynx and ear drums was negative, urine showed very faint albumen and very few hyaline casts.

Aug. 16, 1910, patient in good physical condition. Only slight black line on gums.

This case is interesting because it showed toxic exacerbation even when no fresh injections of bismuth were made and because of the duration of stomatitis, over five months, even when as much bismuth as possible had been washed out.

Bismuth is used for X-Ray work and for its therapeutic value. In outlining sinuses and in gastrointestinal X-Ray work substances other than bismuth may be used. Thus Teage (16) used magnetic oxide of iron suspended in 1 percent tragacanth and claims that this will stay in suspension for hours.

In therapeutic uses in surgery one should not inject more than an ounce of the paste at one time and one should bear in mind that the bismuth must be washed out should any toxic symptoms occur.

1 and 2. Quoted by Meyer
2. Neue Jahrbucher der deutschen Medicin und Chiurgie, Heidelberg, 1829.
4. Sammlung klinischer Vortrage, Volkman, 1880-1886.
5. O Tocsichescom Deistvey Osnovoy Azotno Kisloy Okisy Vismuta, 1870.
6. Archiv f. experimentelle Pathologie u. Pharmakologie, 1885.
7. Illinois Medical Journal, 1908.
8. Journal of American Medical Association, Jan. 9, 1909.
9. British Medical Journal, June 19, 1909.

10. Journal of American Medical Association, March 27, 1909.
11. Ann. Gyn. and Ped. Boston, 1896-97.
12. Journal of American Medical Association, Jan. 2, 1909.
13. Deutsche Zeitschrift f. Chiurgi, 1885.
14. Archives Cliniques de Bordeaux, 1896.
15. Much. Med. Woch., Dec. 8, 1909.
16. Much. Med. Woch., June 8, 1909.

211 *Strickland Building.*

Suppurative Peritonitis.

J. E. Allaben, Rockford, Ill. (*Journal A. M. A.*, March 19), advises for the treatment of suppurative peritonitis the putting and keeping of the patient in the Fowler position, colonic irrigation by way of the cecum and drainage of the peritoneal cavity. Pus does not itself absorb except under pressure, and in the peritoneal cavity absorption occurs mainly or almost wholly by the peritoneum of the diaphragm which is largely avoided by the above measures. He has employed this method in two cases, one of acute perforating gastric ulcer in which the patient made a good recovery, and the other a case of acute perforating gangrenous appendicitis in which the patient died five weeks after the operation from multiple abscess of the liver due to pylephlebitis involving the ileocecal and portal veins. In neither case was there any attempt on the part of the peritoneum to limit the spread of the infection. The peritonitis in both cases disappeared rapidly after appendicostomy or cecostomy and the above-mentioned measures, though in the one case the pelvis and lower abdomen were full of pus and gastric contents and in the other there was free pus in the abdomen and the cecum had apparently a lowered vitality. The disadvantages of the treatment are given by him as possible leakage of physiologic salt solution and feces into the peritoneal cavity, complications from a fixed position of the cecum, and the danger of persistent fecal fistula. As a precaution against leakage he uses a fine catgut suture passed through the serous and muscular coat of the cecum and appendix stump and through the wall of the catheter. The second objection he thinks can be rarely realized, but the fear of a persistent fecal fistula has a more rational foundation. Where the stump of the appendix can be utilized, the danger he thinks is less than in cecostomy. With greater experience, he thinks, and with the resulting improved technic, this danger will become less probable. The advantages of the operation are summed up as follows: "1. Large quantities of hot normal salt solution may be rapidly introduced into the circulation, immediately after operation, overcoming shock, quenching thirst and eliminating toxins. 2. The solution is brought immediately into contact with the portion of the alimentary canal most favorably for absorption. 3. Intestinal paresis due to retention of gases is avoided and early normal evacuation of the bowels is favored. 4. Early relief of toxemia is secured by drainage through the catheter of bacteria-laden feces. 5. The unpleasant and uncertain features of proctoclysis are eliminated, and predigested foods may be administered in definite quantities."

Southern Medical Journal
NASHVILLE, TENN.

SEPTEMBER, 1910

Published monthly at 150 Fourth Ave., North, by The Southern Medical Journal Publishing Co.

For other information see page XI. of advertisements.

THE SOUTHERN MEDICAL ASSOCIATION.

The profession of Nashville is looking forward with great interest to the approaching meeting of the Southern Medical Association, which convenes in this city November 8, 9 and 10. Nashville has long been one of the medical Meccas of the South and Southwest. Perhaps as large a number of the members of this association are alumni of the medical colleges of Nashville as from those of any other Southern city. It will indeed be a "home-coming" for many of them who remember with great affection the scenes and incidents of their medical college days. Nashville is unique among the cities of the South in having furnished three Presidents to the American Medical Association—James K. Bowling, Paul F. Eve, Sr., and Wm. T. Briggs. It had the honor of entertaining that association in 1889 and now welcomes with enthusiasm the coming of this daughter association.

The Southern Medical Association is one of the most flourishing and efficient of the various departments of the national body. It has a wonderful field of usefulness and the coming session bids fair to be unprecedented in the wealth of scientific matter which will be presented. The practical value of a meeting of this sort to the profession can scarcely be overestimated.

Nashville has just opened its new million-dollar hotel, which will be a delightful place for headquarters, and will afford as pleasing entertainment and accommodations as any hotel in the country.

The Southern Medical Journal welcomes with outstretched arms the coming of the Southern Medical Association, and on behalf and in the name of the profession of Nashville and Tennessee extends a heartfelt invitation to its members throughout the Southland. Come and participate in the grand reunion and scientific program!

W. D. H.

DR. WILLIAM LITTERER HONORED.

It came as a pleasing surprise and appreciated compliment when the news was received of the elevation of Dr. William Litterer to the chairmanship of the Section on Medicine in the Southern Medical Association in the place of Dr. George Dock, who resigned.

Dr. Dock has accepted the Deanship and Head of the Department of Medicine in the Washington University at St. Louis, and technically is out of the geographical limits of the Association, which we much regret.

The recognition of the sterling ability and scientific earnestness of Dr. Litterer on the part of his associates is a gratifying tribute to the worth and esteem in which our colleague is held by all who know him. It is a deserved commendation of the unflagging enthusiasm which he has ever manifested in scientific medicine. His work has been prodigious, and for a young man the net results have been considerable. His original investigation as a pathologist upon actinomycosis has placed him in the front rank of American investigators. He was among the first to take up the serum diagnosis of syphilis and has done much in a practical way in the employment of the Pasteur treatment for rabies.

He has been in the forefront of the vaccine sera investigations.

He has been honored before by the local organizations, and this larger meed of preferment is a graceful and well earned tribute.

W. D. H.

DEFEAT FOR OSTEOPATHS IN NEW YORK.

The osteopaths received a setback recently, according to the New York *Sun*, in their fight for recognition by the Board of Health, as regular medical practitioners, through a decision handed down by Supreme Court Justice Putnam, in Brooklyn, in the case of Dr. Charles F. Bandel, one of those who applied some weeks ago for a mandamus to compel the board to grant a burial permit on a death certificate presented by him. Justice Putnam sustained the demurrer interposed by the corporation counsel. He says in his memorandum accompanying the decision:

"While the State has wisely allowed the practice of osteopathy, it does not follow that it thereby holds out one, without any practice in surgery or experience in prescribing drugs, as fully qualified to certify the cause of death. Indeed, it is not certain that a board of health would be compelled to take the certificate of death of all licensed physicians in the event of an epidemic or the spread of some new and mysterious disease.

"Granted that the theoretical education of the osteopath is of a standard equal to that of a doctor of medicine, after he enters on his profession, his practice is restricted, so that it does not appear that he can make the tests by examination of blood and tissues by which alone many diseases can be certainly detected.

"The sanitary code is discriminatory, but the discrimination is not personal and arbitrary. It is based on a limitation which the osteopath may be said to make for himself, and deprives him of no rights which he ought to exercise consistent with the public safety."

BOOK REVIEWS

Surgery and Pathology of the Thyroid and Parathyroid Glands By A. J. Ochsner, A.M., M.D., LL.D., and Ralph L. Thompson, A.M., M.D. Published by the C. V. Mosby Co., of St. Louis.

This text, by virtue of its title, might lead the public to believe that the subject matter covered would be of interest and value only to surgeons. Such is not the case. It covers the field of literature pertaining to thyroid and parathyroid pathology, symptomatology and experimentation in quite as thorough a manner as that of therapeutic relief for conditions growing out of changes arising in the thyroid and parathyroids, and only a portion, I might say a small portion, of this therapy is surgical as yet. Hence the work will not only interest, but will be of practical value to surgeons and physicians alike who are of necessity interested in the diagnosis and relief of the many obscure lesions which have a direct or apparently an indirect connection with these glands.

Unlike the usual text, this does not pertain to a completely worked out field, but to new work, more especially as concerns the parathyroids. So while some of the subject-matter is dealt with in a very definite manner there is much of the book necessarily devoted to the different experimental findings and the conclusions of the various experimenters, drawn from their observations. When a question is doubtful, as many are, especially if it relates to the parathyroids, the authors give every claimant fair treatment by putting his views forward clearly and concisely, often quoting his words extensively. Consequently the book not only teaches us as far as we may be taught accurately, but it refuses to mislead by drawing hasty conclusions from inadequate data. Shortly it is to be hoped that much now in dispute may be settled definitely, but Drs. Ochsner and Thompson have wisely left all uncertainties to be settled in a scientific manner.

It is to be regretted that a considerable number of typographical errors have been allowed to appear in this edition.

W. A. B.

Medical Electricity and Roentgen Rays. With chapters on phototherapy and Radium. By Sinclair Tousey, A.M., M.D., Consulting Surgeon to St. Bartholomew's Clinic, New York City. 750 practical illustrations, 16 in color. Published by W. B. Saunders Co., Philadelphia and London. $7.00.

This is the first edition of this work, and it is very complete in the presentation of the subject. The writer first takes up the elementary principles of electricity, then the physiologic effects of electricity. One chapter is devoted to electro-pathology, including lightning stroke, the pathological effect of strong currents, etc.

The parts of the text dealing with the application of the high frequency currents, Roentgen rays, galvanic and faradic currents, electro diagnosis are well prepared and are up-to-date. The book is a valuable one and will be of great service to those interested in the subject.

J. M. K.

BOOKS RECEIVED

The Practitioner's Case Book: For recording and preserving clinical histories. Prepared and arranged by the editorial staff of the *Interstate Medical Journal*. Imperial octavo; 286 pages; full cloth binding. Printed bond writing paper. With 80 colored anatomical charts (detachable), showing outlines of body and skeleton in light red and the viscera in pale blue. Index for listing patients both by name and case number. St. Louis: Interstate Medical Journal Co. 1910. Price, postpaid, $2.00.

Hookworm Disease. Etiology, pathology, diagnosis, prognosis, prophylaxis and treatment. By George Dock, A.M., M.D., Professor of the Theory and Practice of Medicine, Medical Department Tulane University of Louisiana, New Orleans, and Chas. C. Bass, M.D., Instructor of Clinical Microscopy and Clinical Medicine, Medical Department Tulane University of Louisiana, New Orleans. 250 pages, royal octavo. 50 illustrations, including one colored plate. Price, $2.50. C. V. Mosby Co., St. Louis, publishers.

ABSTRACTS OF CURRENT LITERATURE

Transmission of Infectious Diseases.

Our ideas concerning the methods of transmission of various infectious diseases have undergone alteration in the past few years, and we now need a readjustment with the means taken to prevent the spread of diseases, (Writes Ruhral in Progressive Med., March 1, 1910) There have been a number of articles writen concerning these points, among which may be mentioned those of Doty, *, Edsall, ** and Chapin, ***.

Infectious diseases are transmitted in several ways. In some instances an intermediate host is required, usually an insect which takes the infectious material into its body and transmits it later on to human beings. The patient may transmit the disease directly, as is most frequently the case; for example, a case of diphtheria or measles mingling intimately with other people may infect a large number of individuals very easily. The cases which are most liable to transmit the disease, because they are unrecognized, are the mild, the convalescent, and the atypical cases. Again, the disease may be transmitted by an individual apparently in perfect health who has been associated with some one with the disease, and harbors in his mouth or elsewhere the disease-producing germs. Such an individual is called a disease carrier. The disease may also be transmitted by objects which have come in contact with the sick person or his discharges, and such objects are spoken of under the general head of fomites. Lastly, the disease may be transmitted through the air, but this happens very rarely, and only under exceptional circumstances.

To correctly prevent the spread of any given disease it is necessary to know the cause and how it is transmitted. Three examples of changes in our ideas regarding the transmission of disease are afforded in the instances of malaria, yellow fever, and bubonic plague. In the case of the first, for many centuries transmission was blamed upon the air; in fact, the very name of the disease indicates this and even today in malarial districts people are warned against breathing the night air. We now know that malaria is only transmitted by means of the mosquito, and where this factor is eliminated the disease stops spreading.

In the case of yellow fever, transmission was thought to be by the air, but especially by fomites, hence the severe and unjust quarantine regulations. We now know that the disease is only transmitted through the mosquito, and the protection of individuals from mosquitoes in a rational manner is all that is necessary. The brilliant results obtained in Havana and Panama are too well known to need more than mention.

In the case of plague, the disease is transmitted by rats and fleas and fomites probably play either a very minor role or none at all.

As regards the transmission of disease through the air, it is quite safe to say that all cases reported pretending to prove that diseases are carried through the air for any distance are usually erroneous observations, and where careful investigation has been carried out, it has usually been found that disease has been carried in some other way. I think it is quite safe to assert that diseases are not carried through the air, with the possible exception of measles and chickenpox, and in these diseases the range is but a small one. In whooping cough, during the paroxysm, the patient causes a small spray of mucus and saliva, which may infect the air for a short time for a few feet in front of him.

In regard to fomites, as Doty points out, there is probably little or no danger from rags, money, and similar things. Bank clerks and rag pickers do not suffer from infectious dis-

* The Means by Which Infectious Diseases Are Transmitted. The American Journal of the Medical Sciences, July 1909, p. 30.

** Prophylaxis Against Infectious Diseases from the Standpoint of the Practitioner. Journal of the American Medical Association, January 9, p. 123.

*** Air Infections of Minor Importance. Journal of the American Medical Association, December 12, 1908, p. 2048.

eases any more than other individuals. Articles soiled by coming in contact with patients with certain diseases, as typhoid fever, may be a source of danger, especially by infecting food or drink, but when the rational disinfection of such articles is carried out, therse is, of course, no danger from them.

A fact which has recently been studied very extensively are so-called carriers of infection who are responsible for a great many epidemics. Typhoid fever, cholera, and diphtheria are the diseases most commonly carried in this manner, and it is well known that perfectly healthy people may harbor virulent germs these diseases over long periods of time, and where this fact is recognized and taken advantage of, epidemics may be promptly checked. By far the most frequent means of spreading infection is the patient himself. This brief consideration makes quite clear the means that ought to be used in preventing the spread of disease, and the methods used will vary, of course, slightly with the disease under consideration.

In a general way, it may be stated that persons having infectious diseases should be isolated. The fewer people who come in contact with the disease the fewer will get it. The patient should be protected from mosquitoes, flies, and other insects, especially from mosquitoes in case of yellow fever and malaria, and from flies in the case of typhoid fever and cholera and from fleas in case of the plague. All individuals coming in contact with the patients, as nurses, physicians, and attendants, should not be allowed to go about if they are found to be carriers of infection. The proper disinfection of hands and a little care will usually eliminate this in most instances, but to be perfectly sure, bacteriological examinations would have to be made in some cases. The infection of towels, bedclothes, and other objects which come in contact with the patient is of particular necessity in case of most diseases, and the disinfection of the discharges is of especial importance in case of cholera and typhoid fever. Doty suggests a simple means of disinfecting excreta by boiling, it being a cheaper and more efficient method than the use of chemical disinfectants, which are rarely used in an efficient manner.

Edsall, as well as many others, calls attention to the necessity of educating the public, and we might add physicians and nurses as well, in the proper methods of preventing the spread of disease. In case of the public, the education should be done in such a way as to avoid extreme measures, and it should be borne in mind that among the poorer class of people, after a certain degree of poverty is reached, education is of no avail.

Wm. L.

POLIOMYELITIS.

The pathology and bacteriology of acute poliomyelitis are discussed in a communication in the *Journal A. M. A.*, September 17, by H. E. Robertson and A. J. Chesley, Minneapolis. Dr. Robertson gives a review of the literature and reports six cases with autopsy. From these he deduces the following: "1. Acute anterior poliomyelitis is a specific infectious disease characterized pathologically by general toxemia affecting the parenchyma of the heart, liver and kidneys and the lymphoid tissues of the body, but spending itself locally on the structures of the spinal cord. 2. Grossly the cord is congested, and on transverse section shows softening and often hemorrhages in the gray matter of the anterior horns. 3. In the cord the infectious agent is located in the perivascular lymph channels of the anterior portions, especially invading the gray matter, but extending to the white matter and pia and occasionally the posterior horns. The brain stem and basal ganglia may be involved. In the cord the medulla and cervical and lumbar swellings are particularly affected. 4. The characteristic lesion consists of collections of cells in the perivascular and pial lymph channels and tissue spaces of the anterior horns. Of these cells the polymorphonuclear leukocytes appear early and are relatively few in number. They are soon displaced by endothelial cells arising from proliferation of the lining endothelium and lymphocytes coming from

the blood and lymph streams. 5. Edema of the interstitial tissue and degeneration and destruction of the ganglon cells are always present. 6. The vessels are congested, their walls degenerated and the capillary branches in the gray matter irregularly distended and often ruptured, giving rise to hemorrhages, which always intensify markedly the amount of destruction. Thrombosis was not observed. 7. Early degeneration of nerve fibers from the anterior roots is a constant feature. 8. Stains for micro-organisms were uniformly negative." The bacteriologic part of the report is made by Dr. Chesley. The observations and experiments appear to have been made with great care. Both lumbar puncture and specimens from autopsies were employed, as well as one inoculation into a monkey and numerous similar ones in rabbits. The experimental work confirms the opinion already expressed by other observers that Geirsvold's diplococcus is not a causative factor in the disease. The authors look forward for the solution of the etiologic problem by the workers of the Rockefeller Institute, whose labors have already been so fruitful in enlightening us as to this disease.

Infantile Spinal Paralysis.

The surgical treatment of infantile poliomyelitis is described by D. Silver, Pittsburg, Pa. (*Journal A. M. A.*, September 17). The objects of operation are given by him substantially as follows: First, improvement of form in the paralyzed member by forcible correction (tenotomy, fasciotomy, myotomy, osteotomy, wedge-shaped excision of bone and bone excavation). Second, improvement of function in the non-deformed or corrected member: A, through restoration of power to the paralyzed muscle by nerve anastomosis; B, resoration of muscle balance by muscle and tendon grafting and transplantation; and C, through securing greater stability in the paralyzed member by arthodesis, astragalectomy, silk ligaments, tenodesis, fasciodesis and removal of skin flaps. Each of these is taken up in detail. There is deformity in the majority of patients, and while this can be largely corrected by early, proper and persistent use of passive motion and retention apparatus, in the majority of cases it has been allowed to become more or less permanent. Any operation for the correction of this necessarily includes long-continued over correction. The use of forcible correction, tenotomy, etc., depends on the mechanical conditions to be met and the degree to which passive motion and mechanical appliances have failed. The reduction of deformity in many cases will tend to functional improvement, and with the aid of apparatus and muscle training further operative treatment may not be necessary. For the improvement of function we have first, restoration of power to the paralyzed muscle by nerve anastomosis, but this has a more limited utility than the first enthusiasm for the operation seemed to expect. A study of the literature does not indicate that ideal results are so frequent as was at first thought to be the case. The earlier the operation the better the chance of success, as the muscle degenerates and it must be remembered that there is chance of injury to a healthy nerve by the method. Over-correction of a deformity is a necessity, and this should be performed prior to the nerve grafting. The upper extremity affords the most favorable field for nerve anastomosis. The efficiency of tendon and muscle grafting for restoration of muscle balance has been proved beyond question, and the foot is preeminently the region where it applies. Some success also has been obtained at the knee, but in the region of the hip the results have so far been slight. In the complex musculature of the hand the chances of benefit are much less. The attempt to secure greater stability in the paralyzed member, the production of an artificial ankylosis is sometimes advisable. Arthrodesis should, however, never be employed unless the damage is so great that a stiff joint will be a lesser evil. The operation is specially adapted to the ankle. In the knee the decision should be left to the patient, and in the hip it is often

of distinct value, since muscle and tendon transplantation does not offer much in this region. The shoulder, when the scapular muscles are unaffected, yields at times excellent results. The removal of the astragalus may sometimes be indicated, because it is a factor of instability at the ankle on account of its lack of muscular attachments. Tendon grafting and removal of skin flaps to overcome the tendency of the deformity are also mentioned. Silver says in conclusion that it is rare to find an untreated patient for whom some benefit cannot be obtained by orthopedic surgery. Fortunately, this treatment is most effective in the region most frequently affected, the foot, but in all regions enough can be gained to make the labor worth considering; usually the combination of several operations or procedures will be required.

Syphilitic Arteritis.

E. M. Hummel, New Orleans (*Journal A. M. A.*, September 17), says that only recently has sufficient emphasis been placed on the tendency of specific arteritis to appear shortly after primary infection, and on the relative frequency of isolated involvement of the arterial system as a lesion of syphilis. It is now held that this lesion in its pure form practically does not occur in very late syphilis, or more than three years after the initial lesion. The importance of recognition of these facts in the correct diagnosis and treatment of syphilis is sufficiently obvious. As a matter of course, it is essential to interpret correctly the symptoms of diminution of the blood supply, as srown in neurasthenia, transient paresis, etc., not extending to the gravity of organic disease. When actual hemorrhage, softening or thrombosis occurs, the symptoms are not specially different from those from other causes, excepting the tendency of syphilis to select the branches of the middle cerebral artery for its attacks. In Hummel's experience the involvement of the arteries supplying the striate body, thalamus and bulb are especially frequent. A detailed report of a case going on to autopsy is given, showing these peculiarities very markedly.

Experimental Poliomyelitis in Monkeys

S. Flexner and F. A. Lewis, New York (Journal A. M. A., August 20), contribute an eighth note on their experimental research on poliomyelitis in monkeys. It can now be accepted as an established fact, they state, that human beings and monkeys who have passed through an attack of poliomyelitis have come to contain in their blood certain neutralizing principles for the virus of the disease which are demonstrable by animal tests for two or more years in human beings and probably are equally persistent in monkeys. It has been shown, however, that monkeys after recovery from poliomyelitis are highly refractory to reinoculation with the disease, and it is probable that recovered human beings are similarly protected. A strong active immunity has been conferred. Recovery from the disease, however, is not the only way to obtain immunity, as it has been proved possible to make immune monkeys actively by infection into the subcutaneous tissue, either of a full strength virus or that which has been modified by chemicals like glycerin. This, however, is not uniformly safe, since some of the animals do not develop a strong immunity, but develop paralysis from the treatment. The test of this active immunity, as published, consisted in the power to resist a large intracerebral injection of the filtrate that in far smaller quantities produces paralysis in the control animal. It has been shown that the blood serum of human beings and monkeys recovered from the disease contains neutralizing principles for the virus lacking in normal serum, and it is safe to assume that these neutralizing substances are responsible for the immunity. Like substances, therefore, should be found in the serum of animals directly actively immunized which have not gone through an atack of poliomyelitis. When an active filtrate containing virus is mixed with the serum of actively immunized monkeys and inoculated for a

period of 37 C., it no longer causes paralysis in normal monkeys from intracerebal injection. In the previous neutralization experiments the serum had been taken from monkeys in which, after recovery, reinforcement of the immunity had been attempted, either purposely by subsequent injection of active virus, or circumstantially produced by other experiments on immunity to infection. The authors have since ascertained that reinforcement is not necessary and the animals act as human beings do in respect to the disease, possessing immunity after recovery. The test would also indicate the previous occurrence of any typical attack of poliomyelitis otherwise unrecognized. In the last published communication the authors pointed out that the serum of monkeys recovered from poliomyelitis possessed therapeutic properties for the experimental disease. They have since ascertained that the serum of direcly immunized monkeys possesses like therapeutic properties. It can now be stated that the human serum derived from children also has a therapuetic value. It has been repeatedly observed that failure to develop paralysis after an intracerebral inoculation of an active virus does not increase resistance in monkeys to infection by the same route. The animals that have once withstood an inoculation, react on another occasion like the control animals, and no explanation for this has been found. Monkeys that have been protected from paralysis by the employment of mixtures of virus and immune serum or subarachnoid injections of immune serum do not show any unusual resistance to subsequent intracerebral injections of active virus, from several weeks to 4 or 5 months after the original experiments. Three important points are developed by this fact: Neutralized mixtures of virus and immune serums do not lead to any degree of active immunization; the therapeutic action of the serum is associated with restraint of multiplication of the virus, such as would be required to establish any grade of active immunity; and a simple passive immunity is either not produced by the serum injection or is of brief duration or of small amount. The authors are still seeking for an immune serum for the treatment of poliomyelitis. They have found normal sheep serum to have a definite though slight neutralizing power for the filtered virus, and this is augmented by injection of emulsions of the spinal cord and brain of recently paralyzed monkeys into the sheep. The serum treatment of poliomyelitis is still in the experimental stage and the outcome cannot yet be predicted.

Gonorrhea in Children.

The statistics of the Vanderbilt clinic in New York during the past three years are analyzed by B. W. Hamilton, New York (Journal A. M. A., April 9), who notes a surprising increase in the number of cases of vaginal gonococcus infection revealed by a more careful scrutiny of little children coming to the clinic as outpatients. Their treatment has become a problem of much importance. He describes the methods of examining the children. In 40 cases in which the upper portion of the vagina was tested, gonococci were found in every one. Of the 344 cases observed the average age was 5.1 years. Ophthalmia from autoinfection was rare, occurring in only 4 cases. Arthritis was observed in 3, but there were probably more cases than could not be traced. Nocturnal enuresis, not pre-existing, was present in 10 cases. Inguinal adenitis was very rare and observed only twice. There were no cases of cystitis or urethritis observed, nor a single instance of pelvic or general peritonitis, though such cases have been observed by others. Two methods of treatment were employed—irrigations and vaccines—and methods are described. In the vaccine treatment the opsonic index is not taken, except in a few early cases, as there seems to be little relation between the index and the vaginal discharge. Three separate vaccines were used: one prepared by Dr. R. B. Lamar of the Rockefeller Institute for Medical Research, another from a stock culture at the Presbyterian Hospital, both of these having a

strength of 100,000,000 to 1 c. c., and stock vaccines prepared by Parke, Davis & Co. of strengths, respectively, of 50,000,000, 100,000,000 and 500,000,000 per c. c. In the majority of cases, regardless of age (except under 6 months), the treatment was started by an injection of 50,000,000 every fifth day, increasing the dose by 10,000,000 until 5 injections had been given, when the interval was made 10 days. In most of the acute cases 6 injections sufficed for a cure. In those of long standing, further injections, bringing the dosage up to 200,000,000, were required. Care was taken to insure the completeness of the cure. The conclusions are summed up as follows: "Vaccine therapy has a place in the treatment of this infection in little children for the following reasons: 1. The short time required for a cure in over 85 per cent. of cases. 2. The case of administration of the vaccine: no special apparatus or knowledge of technic being necessary. 3. The vaccine is apparently harmless when used under aseptic precautions. 4. It is not necessary to take the opsonic index, with its complicated technic. 5. It eliminates irrigations, which direct the child's attention to its genitals, at times encouraging precocious masturbation. The frequent douches necessary in the irrigation treatment will, with the best care and gentleness, produce some injury when continued over a long period of time."

Renal Tuberculosis.

The importance of the early diagnosis of renal tuberculosis is emphasized by Dean Loree, Ann Arbor (Journal A.M. A., April 16), who points out that the disease in its beginning presents bladder rather than kidney symptoms, hence the error of the earlier writers in deeming the bladder to be primarily infected. Recent investigation, aided by the urethral catheter, has proved the hemitogenous origin of the disease. Patients presenting themselves to the physician with frequent painful or burning micturition without definite origin should excite suspicion of tuberculosis, and a very rigid physical examination should be made of the lungs as well as of the genitals. Early symptoms in the kidney region are of less value, as slight pain and enlargement may mean only hypertrophy of the sound side. Gœreat diagnostic importance is attributed by Fenwick of London to a thickened ureter in the female if combined with a displaced and contracted urethral orifice. Much can be learned by the use of the cystoscope, and the localization of the disease is only possible with the ureteral catheterization. The use of these instruments, however, is sometimes difficult on account of the disease. At the onset of the irritation the bladder mucosa is much inflamed and congested, rendering the use of the instruments difficult until the condition has been altered by irrigation treatment. When the bladder involvement is superficial, it shows a strong tendency to heal on removal of the kidney focus, but the more persistent conditions call for more heroic treatment. He discontinued the use of carbolic acid on account of the pain produced but has recently employed it again in smaller amounts, allowing it to remain in the bladder but a few seconds and washing out the excess with a 30 per cent. alcohol solution. A tolerance can thus be secured and the full amount used later. The positive diagnosis of renal tuberculosis requires competent bacteriologic and chemical examination. In most expert hands the bacilli can be demonstrated in from 75 to 80 per cent. Not less than three ounces of urine should be sent to the laboratory, after having been drawn with proper aseptic precautions. Bacteriuria without kidney lesions is possible, so it, alone, without pus, is of little diagnostic significance. Tuberculin for diagnosis has little value compared with laboratory methods. With rare exceptions unilateral tuberculosis with the other kidney functioning calls for nephrectomy but many patients are too far-advanced and nephrotomy, or the opening of an abscess, is a life-saving measure. He does not agree with the notion that the kidney always must be removed and he thinks that

with the means for early diagnosis more general operative cases will be less frequent. A case treated successfully without operation is reported.

Syphilis and the Negro.

G. W. Murrell, Richmond, Va. (Journal A. M. A., March 12), points out the disadvantages of the lack of vital statistics of the negro of the south as leading to a misunderstanding of southern conditions. He makes a comparison of the negro of 1859 and the negro of 1909, especially in the matter of sexual disease, greatly to the disadvantage of the latter, and says that disease and dissipation have done their work only too well. Insanity has increased over 1,000 per cent. in fifty years. The high birth-rate immediately following the emancipation has decreased to barely one-fourth of what it was. Morality is very low, and specific diseases have consequently increased and become almost universal. The peresent degenerate negro dies faster and has fewer children than his ancestors. It is his honest belief, Murrell says, that in another 50 years we will find an uninfected negro a freak. Religion does not seem to help the negro, as he has altered the decalogue to suit his conditions. Murrell considers syphilis a far more common scourge than tuberculosis and the subjects of one have often to combat the other also. The disease, he says, is most severe in its manifestations in the negro and his hygienic habits are as bad as can be. There is a special tendency to the papular-serpiginiform formations around the mucous outlets. On account of the almost invariable only partial treatment there is a great predominance of relapsing syphilids. Mucous patches are not so common, on account of the better average teeth of the negro. Murrell claims that serum treatment in some form is the only hope of eradicating the disease from the race and it would have to be compulsory. In treating the negro one must do nothing to give him pain, such as hypodermic injections, nor will he do anything so troublesome as the application of inunctions. With him it is treatment by the mouth or nothing. The disease, he thinks, is a social menace and the future of the negro lies more in the research laboratory than in the schools. Murrell sees no good in his citizenship. He needs a paternal government. Fifty years more, he thinks, will give us another type, more puzzling than those we have now and a still more serious problem.

Pellagra.

J. D. Long, Washington, D. C. (Journal A. M. A., August 27), offers a working hypothesis of the cause of pellagra. It is as follows: "Pellagra is a disease resulting from an injury to the intestinal mucous membrane, produced by the ameba. As a result of the ulceration there is an inflammatory process extending throughout the alimentary tract which interferes with the absorptive power of the intestine and the manufacture of the digestive ferments normally produced in the intestines. Later, owing to long-continued inflammation in the intestine, the pancreas and liver undergo inflammatory change which interferes with the quality and quantity of the digestive juices that they produce, with the result that the food ingested is improperly digested. The presence in the intestine of undigested food favors fermentation and putrefication of its elements, with the production of certain toxins, ptomains and intermediate products of digestion which are harmful to the body." The insanity of pellagra was assumed to be due to the severe and long continued toxemia and the skin lesions to the mechanical pressure on the nerves and their degeneration as a result of the toxemia. This mechanical pressure on the nerves was assumed to be due to some kind of deposit on the articular surface of the vertebrae encrouching on their exit from the vertebral canal and causing the degeneration found in the cord. The seasonal occurrence of the disease was assumed to be due to the extremes of atmospheric temperature occurring in the spring and fall when pellagra most manifests itself. These render the cases much more toxic and the patients become delirious. He treated 25 patients on the basis of this hypothe-

sis, giving enemas of quinin bisulphate, with regulated diet, pancreatin, sodium carbonate and small doses of salts to produce one or two bowel movements a day aside from the effects of the enema. The deposits were treated with inunctions of mercury and the internal use of iodid pushed to the therapeutic limit. Under this treatment 3 patients died, 2 of amebic dysentary after the pellagra lesions had disappeared, 12 patients improved in varying degrees, and 6 more improved and continued to improve, 4 recovered, all symptoms of pellagra disappearing except a slight increase in the patellar reflex. While his studies, he thinks, are suggestive, no conclusions can be drawn as yet; much longer and more detailed studies will we required.

Spinal Cord Tumors.

Pearce Bailey, New York (*Journal A. M. A.*, March 12), believes that we can take a more hopeful view of the operative treatment for tumors of the spinal cord, and that the time has come to let up on our former conservatism. Instead of questioning whether a tumor is present in every case of paraplegia without known cause, we should ask are we sure such a tumor is not present? He reports three cases of recent operation and also the after history of three cases in which the patients were operated on and reports of which were published several years ago. As regards diagnosis he remarks that multiple sclerosis may give symptoms similar to those of tumor of the cord, as also may Pott's disease, aneurism, and syringomelia. Textbooks give so little attention to the diagnosis of metastases probably because they are so unmistakable from the history and the local tenderness they produce. The diagnosis, however, may be difficult, if the lesion is not in the bone or if atypical in not causing tenderness. Metastases of carcinoma, especially of the breast and prostate, are the most frequent and almost always in the vertebrae. The mtastases of carcinoma are usually in the form of direct extension from neighboring parts and may involve or skip the bone. Hypernephromas have a predilection for the vertebrae in their extension. Fibromas cannot be regarded as metastatic tumors, but by their methods of spreading and dissemination are important in diagnosis. Dercum has called attention to the fact that rapidly growing metastases of goiter may occur in the cord. Examination of the cerebrospinal fluid is not of great practical value in diagnosis. It is generally normal, except in case of acute disseminated sarcomatosis of the central nervous system. The Wassermann test may determine the specific character of the tumor. One of the chief dfficulties in the clinical diagnosis of spinal cord tumors is the extreme irregularity of their course. The onset may be sudden but the course not necessarily rapid, and again they may be so rapid as to suggest an acute infectious disease, or they may exist unrecognized for years. History of trauma merits attention as they often arise after injury and may be aggravated by it. The general rules for localization are the same as for spinal diseases generally, but symptoms given by the vertabrae outvalue all others for focal diagnosis. In view of the long intraspinal course of the nerve roots, especially in the dorsal area, it is important to determine whether focal symptoms come from the root or from the segment from which it arises. Experience proves the truth of Brun's law that such symptoms generally proceed from the segment, i. e., that spinal cord tumors compress the segments of the cord rather than the roots that run over them. Hyperesthesia may, however, result from pressure on the root itself. Too much reliance should not be placed on refered pains as localizing signs. They are apt to be too general and indefinite. In the lumbosacral region both cord and root symptoms may be caused but tumors limited to the cauda give mainly sacral symptoms. The Brown-Sequard complex does not occur with tumors in this region but does in the lumbar region. According to Oppenheim, a tumor exerts its chief pressure at its upper pole, com-

pressing at the upper limit only, as in a case he reports. As regards the transverse section of the cord occupied, to determine whether the tumor is prsesing on the cord or growing in it or is laterally, anteriorly, or otherwise implanted, it is not always possible to say. Rapidity of growth may help to determine, and intramedullary tumors may give rise to dissociation of sensation, but this is not very serviceable in differential diagnosis. As regards indications for operation, Bailey considers them much more positive when the tumor appears to be in the cord itself or membranes, rather than in the bones. The only contraindications then are too great weakness of the patient or evidences of irremediable destruction. While the chances of success are poor, the diagnosis of intramedullary tumor cannot be made during life with sufficient certainty to contraindicate the possibilities of good in the operaton. Laminectomy for spinal cord tumor is hazardous on account of the poor resistance of the patients. An important point is to operate early enough. It is well to have the probabilities of situation in mind, as given in the table of Schlesinger. Intradural tumors greatly exceed in frequency extradural ones and the larger proportion are ventral or central in situation. The chances therefore of its being hidden by the cord in operation are very slight. The dura should be opened if it shows no external tumor and no obstacle is found to a hook or probe passed down to the ventral surface of the sac. The details of the technic are given. The author thinks more attention should be given to the escape of cerebrospinal fluid and questions whether some sudden operative deaths may not be due to inattention to this point. He advises operation on a table tilted with the head downward or in the Trendelenburg position, to avoid this complication. After-leakage should never occur as it is easily avoided by careful suturing.

EYE, EAR, NOSE AND THROAT.

Meningitis of Otitic Origin.

E. B. Dench, New York (Journal A. M. A., August 27), classifies meningitis of otitic origin as (1) circumscribed meningitis or epidural abscess: (2) serous meningitis; and (3) purulent meningitis. He says that little is to be said in regard to the symptomatology of circumscribed meningitis; its diagnosis is made in most cases on the operating table. The only symptoms which the patients present are localized headache and slight rise of temperature, which, occurring in the course of acute otitis, warrant the surgeon in suspecting incipient meningeal trouble. The second and third forms are of more interest. Whether the inflammation is serous or purulent seems to depend largely on the virulence of the infecting organism. It is probable that a purulent meningitis is always preceded by a serous one. In suspected meningitis in ear disease the labyrinthine involvement should be looked for, as shown by disorders of equilibrium, vertigo, nystagmus, etc. In the early stages the nystagmus may occur toward either side, but, as the disease progresses and the labyrinth becomes paralyzed, it is usually more marked toward the healthy side. Both the turning and caloric tests should be used. Later the nystagmus toward the sound side may disappear or give place to one toward the diseased side, positive evidence of a retrolabyrinthine lesion, in the cerebral substance or in the meninges close to the vestibular nerve. In adults an examination of the hearing is important and the appearance of a sudden and profound deafness, especially if accompanied with vestibular symptoms, should suggest beginning meningitis. Cochlear involvement ordinarily shows itself by deafness, loss of bone conduction and failure of perception of the higher musical tones. Many authors speak of facial paralysis as a symptom of meningitis, but Dench thinks that this is not necessarily so in ear disease. It is probable that a serous meningitis is never fatal of itself but if it presses on to the purulent stage it is

more serious. A purulent meningitis may run a rapid or fulminating course with very few symptoms, causing death even within a few hours. In slower progressive suppurative types symptoms can aid the diagnosis. In adults in severe cases headache is prominent, usually general and severe. Vomiting often occurs, ordinarily being preceded by constipation. High temperatures is the rule, more especially in adults, and symptoms on the part of the ocular muscles and neck rigidity is an early symptom. The patellar reflexes are generally increased. The Kernig sign is usually present and Dench, in a number of cases, has seen the Babinski symptom. The mental symptoms are of some significance. At first there is often a light delirium passing later into coma and in children we may have convulsions, though they are rare. Usually he has found a high leucocytosis and a decided increase of polymorphoneuclears, which falls in case of an improvement under treatment. The blood count is therefore important. The most certain and convincing symptoms are the increase in submeningeal pressure as shown by lumbar puncture and the character of the liquid obtained. If this is turbid and shows pus cells we have to do with a purulent meningitis. If clear and germ free, an intracranial neoplasm may be thought of. There are also, of course, the fundal changes of intracranial pressure to be considered, frequently observed on both sides, but most frequently on the side of the involved ear. An early diagnosis is important and lumbar puncture should be made early in doubtful cases, as the longer the disease goes on the graver the prognosis.

THE OPERATIVE TREATMENT OF OTITIC MENINGITIS.

Holger Mygind, M. D., Copenhagen, Denmark, (Journal A. M. A., August 27), discusses this subject and states that operation for otitic meningitis ought to be performed without loss of time. Each hour that passes before operation may be fatal. The elimination of the primary focus in the ear is the salient point in the surgical treatment of otitic meningitis, and should be done as thoroughly as possible. This involves the opening of the labyrinth in all cases in which either the functional examination during the operation shows that it is diseased, the most frequent sign being the existence of a labyrinth fistula. In order to get the external wall of the labyrinth well exposed for inspection it is necessary to perform a radical operation also in cases of acute osteitis of the mastoid process. It is, besides, easier to perform craniotomy over the tympanic cavity after radical operation. To guard against the possibility of thrombosis of the sigmoid sinus, he exposes the whole perpendicular part of the sigmoid sinus and examines it. He generally makes a puncture with a Pravaz syringe. If this reveals fluid blood in two different places a little apart from each other it is probable that there is no thrombus. If the syringe remains empty or if pus is extracted he does not open the sinus and expose the lateral wall during this stage of the operation, but waits to do it at the end of the operation, when craniotomy is performed, in order to avoid infection of the soft membranes of the brain from the diseased sinus, in case it should be found necessary to open the subdural space. In these cases, as a rule, he does not ligate the jugular vein, partly because he has not faith enough in the beneficial effect of this operation in the majority of cases of thrombophitis and partly because he fears that ligation of these veins produces an unfavorable circulation in the diseased brains. Furthermore, the ligature prolongs the narcosis, which is often very long, especially if the labyrinth is opened.

He performs craniotomy by enlarging upward the bony cavity produced by the radical operation, using as much as possible a strong cutting forceps and making an opening extending 2½ inches horizontally and about 1½ inches vertically. The opening should be so situated as to expose freely for examination first, that part of the dura corresponding to the mastoid antrum; second, that part corresponding to the attic, for the inflammation of the

soft membrane of the brain occasionally starts here as a local pachymeningitis; and, third, the part of the dura which covers the posterior surface of the petrous bone, for there are found now and then small, deep-seated epidural abscesses which otherwise are easily overlooked. When looking for this form of abscess the free exposure of the sigmoid sinus, performed in the first stage of the operation, is of great assistance, as the inner edge of the perpendicular section of the sinus, represents a line beyond which one must not go. Regarding the routine opening of the subdural cavity in these cases, he says the question is still subjudice, but states that it should undoubtedly be done in the following class of cases: (1) When a fistula is found in the dura, for then there is sure to be either a pure subdural abscess or a subdural abscess complicated with a superficial abscess of the brain (what Macewen calls an ulceration of the brain); (2) when there are signs of gangrene of the dura, which shows itself by a part of the cranial surface of the dura being discolored, soft and uneven on the surface, and in which case it is highly probable that there is a suppurative pachymeningitis interna with or without superficial abscess of the brain; (3) when the subjective or objective symptoms point toward the existence of a brain abscess; this must be suspected especially when brain symptoms have existed previously to the development of meningitis, when there is slow cerebration and when there are local symptoms. It is, however, an established fact htat meningitis may be accompanied by local symptoms without an abscess of the brain being present.

Otitis Media.

Hiram Wods, Baltimore (Journal, A. M. A., August 27), says that physicians are becoming keener in their appreciation of early ear disease, and consultations regarding a possible otitic origin of systematic conditions are greatly increased. Some facts thus developed seem to him worthy of discussion. The general belief in regard to otitic media is that the ear involvement is a sequel to infection elsewhere, and among these infections is influenza. To justify the diagnosis of primary otitic infection we would have to find first, systematic evidences of infection; second, objective evidence of ear disease; third, absence of local disturbances that might be a cause and, fourth, relief of constitutional symptoms and cure by treatment confined to ear drainage. If primary otitic infection is a reality and if it is capable of producing systematic infection it is our duty to insist on the necessity of including the ear in routine examinations for the cause of such symptoms. It does not always show itself in the order of exciting cause, pain and other subjective symptoms before the discharge makes diagnosis certain, and without them nothing but routine examination by a competent physician can demonstrate the cause of the general illness. Akin to primary otitic infection are the delayed ear complications of various diseases sufficiently distant in time to throw doubt on the causative relation. Such latent otites have one important bearing on everyday otology. Specialists should impress on general practitioners that they are frequent and the patient should not be dismissed as well until the ears have been examined. In this way some cases of deafness can be avoided. A feature which often puzzles not only the physician but his consultant, is the meaning of prolonged fever in extremely light cases of otitis media. Notes of three cases are given. If this fever is due to the ear it is the physician's duty to get complete drainage. If not, it is his duty to know. One may have to employ a mastoid operation, which must be avoided if the need of it does not exist, and it is sometimes a puzzling question of diagnosis. Woods lays some stress on the leucocyte count in this condition, as with it and the temperature we have pretty reliable guides regarding an otitis, as a cause of systematic disturbances as distinguished from essential fevers. There is always the possibility of another lesion with the ear trouble. In deciding if mastoid drainage is needed, he thinks that the amount of the otorrhœa is an

important guide which is often neglected. A question which he would like to hear discussed is what is the line of demarcation between the safety of the tympanic and the necessity for mastoid drainage? Is there anything outside of time and profuse discharge to guide us? He reports a case of convulsions occurring in otorrhea and relieved by incision. He has heard of other such cases. Two other cases of what he has called referred pain, in one in the neck along the sternocleido-mastoid muscle and in the other in the right parietal occipital region, were cured by treatment and incision. He thinks that they were referable to an unusual connection between the tympanic nerve and other branches of the glossopharyngeal nerve through the petrosal ganglion. In conclusion, he says that an improved attitude toward ear troubles on the part of medical practitioners has brought about a definite change in otologic practice, at least in his own. In private work, chronic otitis media, which was formerly much seen, is rare, and even acute otitis media allowed to go on to ulceration of membrane is not very frequent, but constitutional symptoms due to ear disease without gross evidences of the latter, are more common. The moral of it all is that aurists must be good enough physicians to make differential diagnosis.

SURGERY.

Fracture of the Patella.

After giving a pretty full description of the types of patella fracture, its etiology, symptoms and diagnosis and prognosis, E. P. Magruder, Washington, D. C. (Journal A. M. A. June 4), discusses its treatment, operative and non-operative, in some detail. He thinks that in absence of a competent surgeon fully equipped for all antiseptic precautions, the non-operative conservative treatment should be the rule. The leg and thigh should be raised to an oblique angle with a well-padded posterior splint, a little wider than the limb, and extending from the hip beyond the heel. Aspiration under antiseptic precautions with elastic compression on the thigh, 10 minutes 3 times a day, are valuable aids. After 5 or 6 days, when the effusion has subsided, with the leg still extended and the quadriceps relaxed, the fragments should be brought into accurate apposition by adhesive straps applied so as to prevent any tilting, and it is advisable to leave this firm and untouched for the splint, allowing of occasional examinations. After 6 weeks the patient may try crutches and gradually move the limb. As regards operative treatment, it gives better functional result and much quicker. The chances for bony union are much greater and there is far less danger of refracture. He finds the oval incision, convexity downward, most satisfactory as allowing better apposition of the fragments and generally better conditions for repair. The subcutaneous operation is nowadays obsolete and the circumferential loop has few followers, as well as the method by which the bony fragments are simply apposed and the open method under proper precautions are practically nil. Proper after-care is essential. In interposition operation is imparative. Wire should never be carried deep enough to penetrate the joint, as it will irritate the cartilage and produce arthritis. Impaired function results from union in faulty position. The combination of the interrupted and reinforced continuous chronic catgut suture is the making of assurance doubly sure. Absolutely accurate coaptation and repair of the accessory extensor aponeuroses are vitally essential, more so in some cases than coaptation and repair of the bone itself. Eminent authorities to the contrary notwithstanding, bony union of a transverse fracture can certainly be acomplished if the carefully sutured bone is reinforced by a like carefully sutured aponeurosis. If any exposure is made an ample exposure under proper antiseptic precautions is justified. Other things being equal, the oval incision permits the best drainage, if drainage is needed, while it also retains anatomically the best arterial and nerve supply. The suture material, if non-absorbable, should be the smallest con-

sistent with the needs and the chances of pressure necrosis should be reduced to the minimum by complete extension of the limb in the oblique position which insures complete inactivity of the quadriceps. The most progressive surgeons here and in Europe agree that the open method and suture gives the best results.

DERMATOLOGY.

THE THERAPEUTIC USE OF REFRIGERATION, Particularly with Solid Carbon Dioxide, by Pusey. President's address. The Jour. Cut. Dis., July, 1910.

After three years of use the author reviews the literature and results. The freezing point of CO_2 gas is 80 degrees C. The liquefaction point of air is -182 degrees to -190 degrees C. Solid carbon dioxide has practically displaced liquid air. Jackson states that there is no difference in the effect on the tissues whether we use liquir air or CO_2, except that the effect is more rapidly obtained by the former. The author has observed no difference in the clinical results produced by liquid air and solid CO_2, and CO_2 is much more convenient to handle. Solid CO_2 will produce any degree of reaction that is desired up to complete destruction of the frozen tissue, and this may be accomplished in from a few seconds to a few minutes. The amount of pain is trivial. There is first the sensation of cold, then a stinging sensation comparable to that of the bee sting. In speaking of the advantages of CO_2 the author compares it with electrolysis. For removing small lesions, papillary ectases and moles, CO_2 causes more swelling than electrolysis, and it also produces a blister, which does not follow a treatment by electrolysis, but CO_2 produces less pain. (A local anesthetic can be used with advantage in removing such lesions by electrolysis, practically without pain.)

Principles of the Use of CO_2 Snow.—The principle underlying the therapeutic use of solid CO_2, as of liquid air, is the production of a relatively deep, sharply defined inflammatory reaction in living tissue by a sudden intense freezing. The reaction can be regulated so that one can accurately produce all the degrees of effect upon tissues from an evanescent inflammatory reaction to a reaction so intense that it results in complete destruction of the involved tissues. The inflammatory process falls short of causing necrosis of the connective tissue and results in an interstitial sclerosis, with the destruction of the more highly organized structures and of diseased tissues of lower resistance, thus destroying lesions with a minimal apparent scarring.

Factors Influencing the Effects of Solid CO_2.—The effects are controlled by two factors, *pressure* and *time*.

Pressure.—It may be practically stated that the depth of the freezing process varies with pressure, the heavier the pressure the deeper the freezing. Mere contact with the skin results in superficial but instantaneous freezing. The effect desired, therefore, is largely controlled by pressure.

Time.—As a matter of fact, the time of the application is a more important factor. Momentary freezing of the skin produces a slight inflammatory reaction; five to ten seconds will result in an acute dry dermatitis; twenty to thirty seconds produces an intense inflammatory reaction, usually with the formation of a bulla, with some sclerosis of the skin. Twenty or thirty seconds as a rule do not produce any apparent scarring, though they will produce permanent whitening of the areas. The results vary in different individuals. Operators should time the applications with a watch. The reaction on young children for the same time is much more intense than it is on adults. The reaction is also greater upon a surface which has been previously exposed to X-rays to the effect of producing a dermalitis.

Technique.—The snow is collected from an ordinary CO_2 cylinder by allowing the gas to flow into a chamois skin, when it can be molded into any shape or size and applied directly. The simplest method for shaping the snow is

to pack it in tubes of hard rubber or metal the size and lengths wanted. The mouth of the tube may be flared for convenience. The stick of CO_2 has been dipped into ether before making the application with a view of increasing the freezing capacity of the CO_2, but the author has tested out this question and states in conclusion that nothing is gained by this modification.

But little after-treatment is needed. The author requires the application of hydrogen peroxide once or twice a day, and advises against any other sort of treatment on the exposed surfaces, but on the covered surface he protects the lesion with a gauze dressing, dry or spread with a boric acid rose ointment. But few bad results have been recorded from this treatment. The scar is of excellent character. There has been no trouble from emboli in the treatment of vascular neavi.

Therapeutic Applications.—First, for the purpose of stimulation; second, for the purpose of destroying a growth in the skin by interstitial sclerosis; third, for the purpose of producing immediate destruction of masses of diseased tissue in the skin.

It has been used in *ezcema, lichen planus* and other circumscribed chronic dermatoses, as a stimulating agent. In *lupus erythematosis* it has proven to be a valuable agent.

Chloasma and *senile lentigo* have been successfully treated, also *zanthoma planum.*

It may be used in removing *warts,* and has been very successfully used in removing *naevi* of all types. *Senile keratoses* readily respond to this treatment. It is *not* recommended in *epithelioma.* J. M. K.

Sporotrichosis. By Richard L. Sutton, M.D. Jour. A. M. A., July 17, 1910.

The author discusses very briefly the literature of the subject. (A most thorough discussion of this subject, "Sporotrichosis in Man," by Hyde, of Chicago, appeared in the Jour. Cut. Dis., July, 1910.) Sutton's article is illustrated with the report of a case which will be presented here.

The patient was a housewife age 30, general health good, no history of serious illness. Five months before the patient was seen by Sutton there was a pricking sensation in the ball of her right thumb, which she thought was due to the presence of a small splinter, but finding none, dismissed the matter. A few days later, however, a painless reddened papule developed on the surface, which slowly increased to the size of a small pea. Applications of a mud poultice were made, and finally the epidermis exfoliated, leaving a sharply outlined, oval ulcer, 1 by 2 cm., and having a rough, bright red base. The entire lesion was covered with grayish pus, and there was practically no pain. At this time the patient consulted a physician, who cleansed the part and used antiseptic dressings. Four weeks after the appearance of the papule a hard cutaneous nodule developed near the base of the thumb. Three days later a second nodule appeared a few centimeters back of the first. At intervals of a few days other lesions developed until finally a chain of seven, extending from the thumb to the shoulder, was present. There was no involvement of the epitrochlear or axillary glands, and no elevation of temperature.

When seen by Sutton, the first phalanx of the thumb of the right hand was considerably swollen. On its palmer surface was a well defined oval ulcer with a rough, bright red granulating base. The surrounding exidermal wall was undermined, and there was an abundance of grayish, tenacious pus. There were two small, excoriated papules, one on either side of the thumb, midway between the ulcer and the first joint. The nail was not involved. The areola of hyperaemia which usually surrounds an inflamed wound was here quite narrow, and there were no red streaks extending up the arm. The first nodule back of the ulcer was about the size of a larg pea, hard, nonadherent to underlying structures, and gave no subjective symptoms, and the overlying epidermis was normal in color. Two centimeters farther back was a second lesion, smaller but

of a purplish hue and soft to touch. Immediately below the anterior fold of the elbow joint there was a larger tumor (1.5 by 2 cm. and 1 cm. in height) purplish in color, soft and compressible. High up on the inner surface of the arm were four nodules arranged in an irregular chain. Fluctuation existed in only one of these. The epitrochlear and axillary glands were still not palpable. The signs which commonly mark the presence of an ascending cellulitis were absent. The patient stated that if she had not seen the nodules on the wrist she would not know they were present.

A clinical diagnosis of sporotrichosis was made and the case referred for bacteriologic examination. The large lesion near the elbow was incised, cultures made, and four days later there was abundant growths on all the tubes inoculated. The pus from the lesion was of a mahogany color, thick and stringy. The patient was treated with potassium iodide 60 to 90 grains daily, with satisfactory results, the lesions healing in ten or fifteen days. The infection usually occurs in a small abrasion on the surface.

(The author is to be commended for the clear report of this case.) J. M. K.

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Adrenalin Chloride, 1 part; an aromatized neutral oil base (with 3% Chloretone), 1000 parts. An astringent and emollient. To be diluted with three to four times its volume of olive oil and administered in the same manner as Solution Adrenalin Chloride (above noted).

Ounce glass-stoppered bottles.

We also supply **Adrenalin Ointment** and **Adrenalin and Chloretone Ointment** (collapsible tubes, with elongated nozzles), both successfully used in the treatment of hay fever.

Anesthone Cream

Formula of Dr. J. E. Alberts, The Hague, Holland.

Adrenalin Chloride, 1:20,000; Para-amido-ethyl-benzoate, 10%; in a bland oleaginous base.

In contact with the mucous membrane of the nares, in the treatment of hay fever, **Anesthone Cream** affords marked relief, producing an anesthetic effect that is prompt and lasting. A small quantity (about the size of a pea) is applied three or four times a day, the patient snuffing it well into the nostrils.

Anesthone Cream has been tested by numerous clinical workers, the consensus of opinion being that it affords a practical and satisfactory means of relief from symptoms due to hyperesthesia of the nasal mucous membrane; and the fact that the relief continues for several hours in some cases is worthy of consideration when one remembers the fleeting character of most local anesthetics.

Collapsible tubes, with elongated nozzles.

We also supply **Anesthone Tape** (likewise useful in hay fever), a selvage-edge product, one-half inch wide, impregnated with a 1:20,000 solution of Adrenalin Chloride and 5% solution of Para-amido-ethyl-benzoate, agreeably perfumed. A piece two or three inches long is cut off and inserted in each nostril. Small vials.

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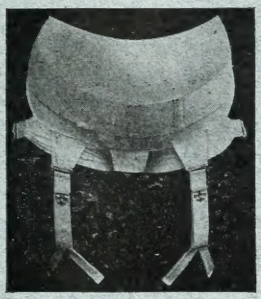

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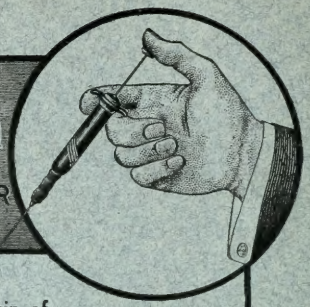

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